

FLIGHT

First Aero Weekly in the World.

Founder and Editor : STANLEY SPOONER.

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 400. (No. 34, Vol. VIII.)

AUGUST 24, 1916.

Weekly, Price 1d.
Post Free, 1½d.

Flight.

Editorial Office : 44, ST. MARTIN'S LANE, LONDON, W.C.
Telegrams : Truditur, Westrand, London. Telephone : Gerrard 1828.
Annual Subscription Rates, Post Free.

United Kingdom .. 6s. 6d. Abroad .. 11s. 6d.

CONTENTS

	PAGE
Editorial Comment :	
The Air Committee's Report	709
"Answers to Correspondents"	710
The Antics of the German High Sea Fleet	712
And the Air Raids	712
The British Air Services	713

The Roll of Honour	715
Honours for the R.F.C.	715
From the British Flying Grounds	716
Flying at Hendon	717
The Flying Services Fund—Administered by the Royal Aero Club	717
Answers to Correspondents	717
Armchair Reflections. By the "Dreamer"	718
Aviation in Parliament	719
The Advisory Committee's Annual Report	720
Airisms from the Four Winds	723
Personals	724
Aircraft Work at the Front. Official Information	725

TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

Order "FLIGHT" to be either delivered or reserved for you regularly.

As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

EDITORIAL COMMENT.



LAST week the publication of the interim report of the Air Committee, in regard to their investigation into the charges brought by Mr. Pemberton Billing against the administration of the Air Services, was just in time to be reproduced in the pages of "FLIGHT." Comment had necessarily to be suspended at so late an hour when going to Press. Taken as a whole, the conclusions come to are exactly what might have been expected by ninety-nine out of a hundred sane

men, who have followed the politics of Aviation. Although Mr. Billing still persists in aggressively declining to withdraw a single point of his original charges, we can nevertheless detect in this refusal a very clear indication of a desire—as we said long ago he would—to get clear of the "murder" portion of his parliamentary utterances. At least that is the only possible meaning to be evolved from the statement in his "reply to the Air Committee's report," which he contributed exclusively (we wonder why) to *Reynolds'* newspaper of last Sunday, to the following effect :—

"I am certain that the reforms and improvements which have been made during the last six months would never have been effected, or even attempted, if I had not employed what I am prepared to admit was dramatic rhetoric, to force the hands of the Government, and to rivet their attention to the fact that some of our finest men were daily sacrificing their lives for want of intelligent direction.

"Let it be understood : Despite the findings of the Committee, I neither qualify nor withdraw the statements I have made, or the charges I have brought."

It is as well to have this admission on record, as it disposes at once of the unwarranted charge against the Administrative Heads of the Air Services. We differ from Mr. Billing, as we have all along, in his assumption that he would not have obtained a hearing for his demand for an investigation into the affairs of the Air Services, except by his aggressive and highly unseemly tactics. That there was room for improvement in the Services, there has been no manner of doubt for some time past, and nobody knew this better than those responsible for the executive side of the Services. Reform and

reorganisation had long before been initiated by the responsible heads, and it must have been well known to Mr. Billing, that so far as the main items of his complaints were concerned, they referred to "back numbers" already out of date, and well on the way of being, if not already, remedied. Therefore we repeat once more that in our opinion the tactics adopted almost immediately after his *début* in the House, have not borne the fruit which might have been hoped for, when Mr. Billing was returned by East Herts to Parliament, as the representative of Airism. No man probably had a greater chance of making good than had "P.B." when he started his parliamentary career. He not only had a good cause to champion, but a great one, one which should have been far removed from the surroundings of hysteria. Presumably the only justification—if anything can justify such tactics—from a parliamentary standpoint is to be found in the necessity of going one better than members who had previously, for their own ends, endeavoured to "gas" the House on the Air Question. It appears to have been a case of which should shriek the loudest, and there is not much doubt as to which succeeded.

There was no partial eclipse about the result—it was total eclipse indeed, and since it has not even been a case of "also ran" with "t'others." They have just quietly faded away from the limelight, so far as Air politics are concerned. That the advent of Mr. Billing in the House, and the work he put in during his first and second candidature campaigns, hastened the process, which was already in being, of reorganising the Air Services, we verily believe, and this will stand to his credit in the days to come. But we can only regret that his methods otherwise should have so entirely estranged the major part of the House and the public from him as to largely discount any good to the aircraft industry which all hoped would accrue from having a live and practical advocate in Parliament to watch over the interests of those concerned in this great revolution in the world's affairs.

The Air Committee's interim report, as they clearly state, has been issued comparatively promptly, in order that the criminal negligence charges against the officials and officers responsible for the administration and command of the R.F.C. may be at once negatived. That men like General Sir David Henderson should be officially vindicated was hardly necessary for those who know them. But members of the general public, who are not so fortunately placed, are only too apt to absorb charges and accept them as proven, until some counter-statement is forthcoming. And from that point of view, it was imperative that this most unpleasant position should not be allowed to remain, until such time as the Committee's full report is available. Therefore we welcome this interim statement, which entirely exonerates the higher commands of the Air Services from the slightest suspicion of being guilty of so heinous a crime as that alleged by their accuser. The details of the report, as they appeared in last week's issue of "FLIGHT," speak for themselves, and we think that, in spite of Mr. Billing's "reply" in *Reynolds'*, the conclusions come to by the Committee are, in the main, a fair reflection of the facts as they are set forth. We are not suggesting that there are not weak links in the armour, so far

as want of judgment is apparent by individuals immediately concerned, but this if anything rather emphasises than the reverse the absence of justification with which the original charges were made.

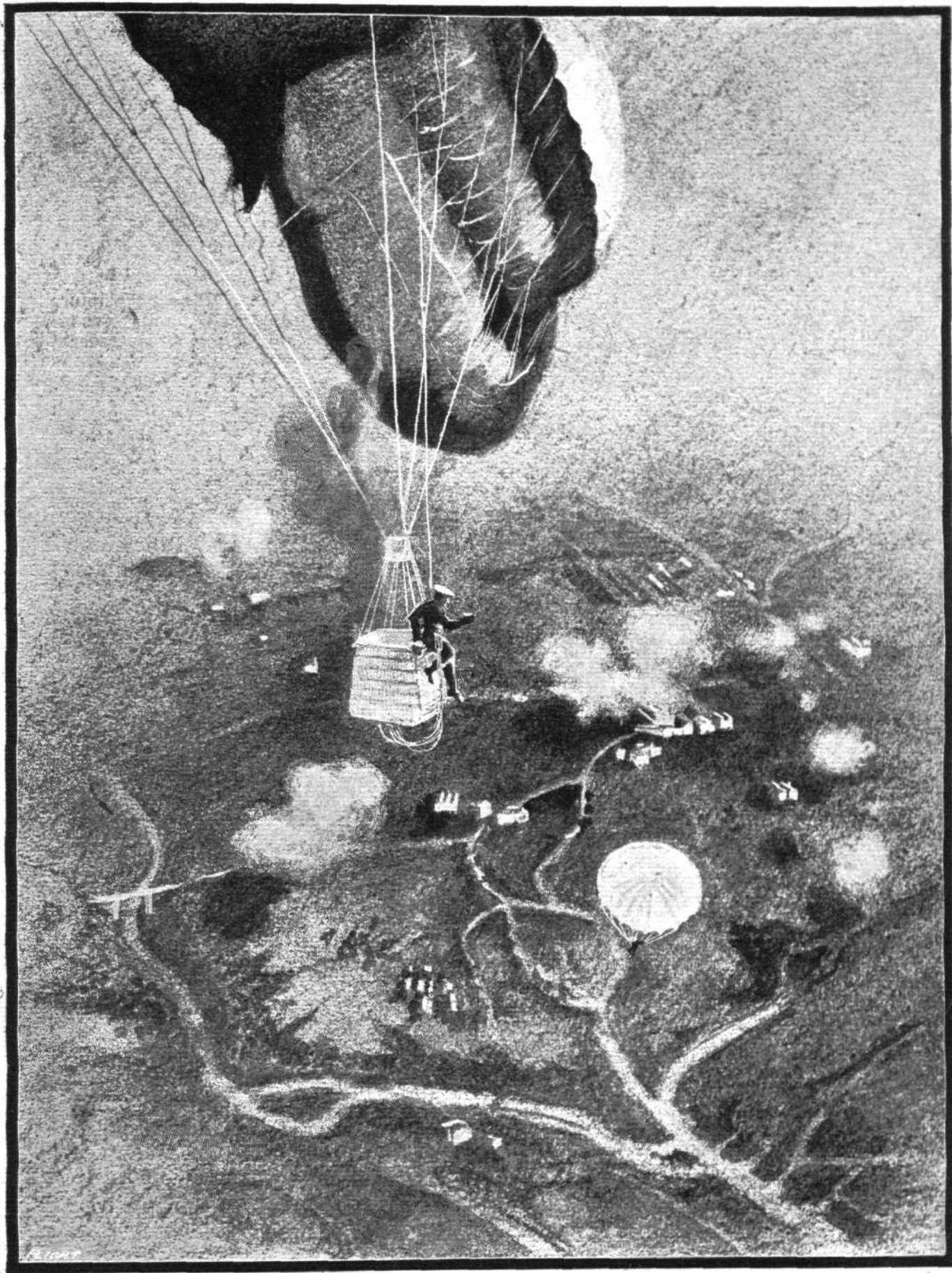
By way of conclusion, the pity of it all is that in "P.B." the industry, under more favourable auspices than he has hitherto appeared, should have a valuable asset, and we are not in the least surprised at the statement in the report to the effect that "the Committee think it right to say that Mr. Pemberton Billing made other criticisms" (other than the "murder" charges) "and suggestions of a totally different character. Some of these deserve and will receive careful consideration."

Constructive criticism is always welcome, when directed in a proper channel and in a spirit of helpfulness. Destructive criticism is no doubt a good deal easier, especially when it is of the "Phwat's the law and who're the bosses, I'm agin the lot" sort of attitude. That "P.B." is so well stocked with the former, that there is no necessity for him, and he should never allow himself to be lured into the latter quagmire of mistaken policy, we verily believe. This, reading between the lines of the report, would appear to be also the opinion of the Committee, as in addition to the quotation already referred to from the report, the Committee say in their summing up:—"Flying, even at home, is at present attended with considerable danger. It is imperative that every precaution should be taken to reduce that danger to a minimum. No one could complain if Mr. Billing had asked that these cases should be inquired into to ascertain whether the deaths of the men might have been prevented, but to base upon these accidents, charges of criminal negligence or murder is an abuse of language and entirely unjustifiable."

It would be difficult, we think, to find anyone to disagree with the spirit of this conclusion, and if Mr. Billing will only follow the hint so clearly expressed in the words, in his future procedure, there may be hope of his rehabilitating himself in the good opinion of those who condemn and have no sympathy with his offensive and unconvincing methods.

Answers to Correspondents."

From several correspondents for some time past communications have reached us suggesting we should resume our "Answers to Correspondents" column, so that readers may be able to obtain through it solutions to any queries they may have, and also, where the matter lends itself to general treatment, glean knowledge from the replies to others. We have, therefore, decided to accede to the general desire expressed, as although much of the information given may be of a more or less elementary character, there are now such a number of new recruits coming into the art, this should prove—where the subject-matter of a correspondent lends itself to a useful answer—helpful to many who may have had a similar doubt, unexpressed, in their minds. Where a query is of sufficient general interest, our idea will be therefore to more or less preface the answer with the point raised, so that other readers may follow the particular point which is dealt with. Others of a more personal character naturally will carry no interest with them except to



ALL IN THE DAY'S WORK OF THE OBSERVATION BALLOONS AT THE FRONT.—An incident which obtained the D.S.O. for Second Lieutenant A. G. D. Gavin, R. Highrs., Special Reserve and R.F.C., "For conspicuous presence of mind and unselfish courage. When his balloon broke loose and drifted fast towards the enemy's lines, he instructed his passenger in the use of the parachute and helped him out of the basket. He then destroyed all his papers, and descended by his own parachute, landing under machine-gun fire close to the trenches. His passenger also landed safely."

the person concerned, and these therefore will be brief and probably unintelligible to others, as is usual in the answers column. We shall allow time to decide whether this "revival" will justify its existence and the space it occupies.

The Antics of the German High Sea Fleet.

"Ha, Ha!" laughed the fleet-footed coward-bully, "I made 'em run—but they never caught me." No better application of this old-time touch of area-sneak methods could be found than its employment as an illustration of the "In and Out" of port cruises of the German "Navee." The German High Command has made much to do as to the British Navy hiding for the past two years. And they are quite right, for that is just what it has been doing—hiding, so that the German fleet may not know where our ships are placed until too late for the bold Kiel buccaneers to scuttle back to their mine-fields without a real test of strength with Jellicoe's little collection of above-water craft. So it happened again last week that they were able to reach home intact, however much they may have felt humiliated by having to show such a clean pair of heels to our battleships, simply by reason of the one great asset which the Germans possess over us: their Zeppelin eyes of the fleet. As it stands at present, it is more like a game of blind man's buff in which Britain is blind man *all the time*. How the handicap works, against our chances of being able to get to grips with the German ships, guarded as they are by their Zepp, scouts, is well illustrated during an article, upon the latest German scuttle, in the *Daily Telegraph*, by Leonard Spray—a good name for sea journalistic work. He puts it this way from evidence he has collated:—

"At 9 o'clock in the morning the Great German Fleet, at least 60 vessels of all descriptions, was sighted.

"It was carefully guided by three Zeppelins. At 6 o'clock in the evening the same fleet was viewed further north, and this time, with its attendant airships, was steaming furiously eastwards. What had happened in the meantime? This, too, is equally clear from reports of other Dutch captains. At 5 o'clock in the afternoon they saw one or more British squadrons much further south than the 6 o'clock position of the German fleet heading almost due north in the direction of the enemy. Something else they noted. From the northwards appeared three Zeppelins. The airships, immediately on spotting the British vessels, went about in the direction of the main German fleet. Then came a swift dash. Half

an hour afterwards the High Canal Fleet was in mad retreat to its home bases.

"That was the last seen of any German warship in the North Sea. . . . At 6 o'clock the German fleet disappeared, whilst for hours afterwards the British squadrons were sighted, searching for the battle which the German admirals were so careful to avoid. Into the hours of darkness the British pursued hope of contest. No possible chance to bring the enemy to that contest was missed, but, alas! in vain, for equally—and even to a superior extent—no chance that the contest should take place was risked by the Kaiser's admirals. After their Zeppelins had reported the presence of great British forces they devoted all their abilities to escape meeting with the Fleet which they were boasting a few weeks ago they had smashed."

We don't want to rub it in, but we are looking forward with considerable interest to the day when our own fleet will be able to get a little helpful advice from above as to the direction to take so as to avoid the German High Sea Fleet masqueraders, until Jellicoe has managed to manœuvre well behind the wash of the German battleships. Then—well, may we not have much longer to wait for the chance our men, high and low, are seeking.

And the Air Raids.

Taking the German Navy tactics in conjunction with the recent 20,000 ft.-high visits of their Zeppelins over the British coast line, there appears to be a common ground for action just now between these two phenomena. They both hang together, it appears to us, and spell practically but one idea—the administration of the tonic necessary to impart a fillip to the German peoples' halting doubts as to that great and crushing victory for the Central Powers—and that new big German loan which is due, as it can no longer be postponed, next month. Else why all the wonderful fairy tales as to the results of these excursions, fairy tales which outclass Baron Munchausen altogether, even in his most imaginative moments. Either some pastmaster in the art of lying is deliberately and officially concocting these tales for a specific purpose, as is highly probable, or the Zepp. pilots themselves are arch liars, pulling the leg of the German High Command. Either way, the alternative does not induce much respect for our clever, if over-cunning enemies. The Allies' reply to these raids was quickly forthcoming in our raids on the military centres of the German Army, and in the very effective air-work by our French comrades in arms.

New Rank in the R.N.A.S.

An Order in Council, dated August 18th, provides that candidates on appointment to the Royal Naval Air Service are to be designated probationary flight officers, which title they will retain until qualified as flight sub-lieutenant. The Order establishes the rank of probationary flight officer.

The Work of the R.F.C.

In the despatch, published in the *London Gazette* on August 21st, from Viscount French covering the operations in France between October 15th and December 19th, there is the following reference to aircraft work:—

"On November 25th the Royal Flying Corps carried out an effective raid on the enemy's cantonments at Achiet Le Grand, and this was followed a few days later by a similar raid on Don Station and the adjoining stores, in the course of which several fires and an explosion were observed.

"Another air raid against the quay and stores near Miramont was also reported as having been effective on November 30th."

The Supply of Munitions.

In his speech in the House of Commons on August 15th

the Minister of Munitions (Mr. Montagu) said that Gen. Jacquot spoke very highly of our new anti-aircraft guns.

He also said, with regard to the artillery in the field, that the demand was ever for increasing range, as the value of long range fire became more apparent when combined with good aerial observation. The Ministry of Munitions had not been unmindful of this tendency in the past, and was keeping moving with the times.

Later in the debate which followed Dr. Addison, in reply to questions, stated that the Ministry of Munitions have nothing whatever to do with the supply of aeroplanes.

No Sirens After Dark.

NOTICE has been received by police authorities in the Midlands from the Home Office prohibiting the sounding of sirens or buzzers in the case of air raids between one and a half hour after sunset and one and a half hour before sunrise.

The order states that the decision is by direction of the competent military authority, and applies to an area which includes Birmingham, Walsall, Dudley, West Bromwich, Wolverhampton, Wednesbury, Sutton Coldfield and other places.

The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

The following appeared among the Admiralty announcements of August 17th:—

Temporary commissions have been granted to the following, seniority Aug. 16th:—Lieutenant (R.N.V.R.): G. P. Robertson. Sub-Lieutenants (R.N.V.R.): E. P. Rydings, J. D. Fry, A. S. M. Monteath, F. W. Newman and G. E. Thomas.

The following appeared among the Admiralty announcements of August 19th:—

R. W. Springfield granted a temporary commission as Sub-Lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date Aug. 27th.

The following appeared among the Admiralty announcements of August 21st:—

Staff-Surgeon G. D. Bateman to the "President," additional, for R.N.A.S., to date Aug. 20th.

G. H. Snider, entered as Probationary Flight Sub-Lieutenant for temporary service, to date Aug. 27th.

Royal Flying Corps (Military Wing).

The following appeared in the *London Gazette* of August 15th:—

Park Commander.—Lieut. (Temporary Capt.) M. Spicer, North'n R., from an Equipment Officer, and to be Temporary Major whilst so employed; Aug. 1st, 1916.

Flight-Commanders.—Temporary Second Lieut. F. W. Honnet, General List, from a Flying Officer, and to be Temporary Captain whilst so employed; July 30th, 1916. Aug. 1st, 1916: Capt. G. R. Howard, D.S.O., Essex R., Special Reserve, from a Flying Officer; Temporary Capt. W. Lambert, General List, from a Balloon Officer.

Equipment Officers.—Second Lieut. C. E. Robertson, Special Reserve, from an Assistant Equipment Officer, and to be Temporary Captain whilst so employed; June 1st, 1916. Second Lieut. F. H. Songhurst, Special Reserve, from an Assistant Equipment Officer, and to be Temporary Captain whilst so employed; July 21st, 1916. Aug. 1st, 1916: Capt. P. R. Grace, Special Reserve, from a Staff Captain. Qr.-Mr. and Hon. Lieut. W. J. Waddington, R.F.C., from an Assistant Equipment Officer, and to be Temporary Captain whilst so employed.

Flying Officers.—Second Lieut. R. H. Edwards, Special Reserve; July 18th, 1916. Temporary Second Lieut. F. L. Osman, General List; July 19th, 1916. July 20th, 1916: Lieut. C. I. Jameson, 43rd Canadian Inf. Bn.; Temporary Second Lieut. K. M. St. C. G. Leask, Devon R., and to be transferred to the General List; Second Lieut. R. E. Meek, Wilts. R., Special Reserve, and to be seconded; Temporary Second Lieut. E. H. Russell, E. York. R., and to be transferred to the General List; Second Lieut. C. L. S. Thomas, Bord. R., and to be seconded; Temporary Second Lieut. J. Kerr, Gord. Highrs., and to be transferred to the General List; Second Lieut. W. M. Carlyle, Special Reserve; Second Lieut. S. W. Carline, Special Reserve.

Adjutants.—Temporary Capt. J. H. S. Annesley, General List; June 25th, 1916. Capt. W. H. C. Ramsden, E. York. R., and to be seconded, vice Major A. F. S. Leggatt, R. Scots; June 26th, 1916. Temporary Capt. G. C. Anne, York. L.I. (T.F.), vice Lieut. (Temporary Capt.) A. McR. Moffat, Arg. and Suth'd Highrs. (T.F.); July 14th, 1916. Temporary Lieut. D. L. Cox, General List, vice Capt. C. F. Gordon, N. Staff. R.; July 27th, 1916. Capt. M. Nicholson, N. Midland Brig., R.F.A. (T.F.); Aug. 1st, 1916.

Assistant Equipment Officer.—Temporary Capt. R. F. Stapleton-Cotton, A.S.C., and to be transferred to the General List; July 29th, 1916.

The following appeared in a supplement to the *London Gazette* issued on August 16th:—

Flying Officers (Observers).—July 28th, 1916: Lieut. J. S. de L. Bush, Som. L.I., Special Reserve, and to be seconded; Temporary Lieut. E. D. Messervy, Lond. R. (T.F.); Lieut. L. Drummond, Can. Eng.; Second Lieut. (on probation) C. J. Pile, R.F.A., Special Reserve; Temporary

Second Lieut. J. Edwards, General List; Temporary Second Lieut. G. T. Richardson, General List. July 30th, 1916: Temporary Lieut. F. G. Pearson, R. Fus., and to be transferred to the General List; Temporary Second Lieut. W. E. G. Bryant, R. Fus., and to be transferred to the General List. July 31st, 1916: Temporary Capt. R. D. Simpson, A.S.C., and to be transferred to the General List; Temporary Lieut. T. L. W. Stallibrass, att'd. 9th Hodson's Horse, Ind. Army; Second Lieut. H. Tatton, D. of Lancaster's Own Yeo. (T.F.); Temporary Second Lieut. A. E. Wynn, General List. Aug. 1st, 1916: Lieut. S. H. Clarke, Wilts. R., Special Reserve, and to be seconded; Second Lieut. C. P. F. Lowson, Rif. Brig.

Memoranda.—Temporary Second Lieut. G. H. Padley is transferred to the General List, and to be Temporary Lieutenant whilst employed with the R.F.C.; Nov. 6th, 1915.

Acting Sergt.-Major S. Mills, from R.F.C., to be Temporary Second Lieutenant for duty with the Military Wing of that Corps; July 30th, 1916.

To be Temporary Second Lieutenants for duty with R.F.C.—Aug. 5th, 1916: Corpl. P. C. E. Johnson, from Haileybury Coll. O.T.C.; Cadet Corpl. J. F. Duff, from Winchester Coll. O.T.C.; Sergt. C. O. B. Beale, from Haileybury Coll. O.T.C.; Sergt. R. S. Asher, from Winchester Coll. O.T.C. Aug. 8th, 1916: Pte. B. E. D. Broughton, from Inns of Court O.T.C.; Staff-Sergt. L. G. Bacon, from 4th Hamps. R. (T.F.); Leading Mechanic J. Southall, from R.N.A.S.

The following appeared in a supplement to the *London Gazette* issued on August 17th:—

Squadron-Commander.—Lieut. (Temporary Capt.) J. E. A. Baldwin, 8th Hrs., from Flight-Commander, and to be Temporary Major whilst so employed; July 1st, 1916.

Flying Officers.—Second Lieut. J. O. Leach, Midd'x R., and to be seconded; July 8th, 1916. July 20th, 1916: Capt. R. O. Bell-Irving, 16th Canadian Inf. Bn.; Second Lieut. E. A. Floyer, Ind. Army Reserve of Officers, from a Flying Officer (Observer); Lieut. P. E. M. Le Gallais, R. Suss. R., from a Flying Officer (Observer); Temporary Second Lieut. G. G. Boyton, General List, from a Flying Officer (Observer); Temporary Second Lieut. J. Thompson, General List; Second Lieut. E. J. Smyth, Special Reserve; Second Lieut. H. S. Pell, Special Reserve; Second Lieut. E. M. Wright, Special Reserve. July 21st, 1916: Second Lieut. L. J. Bayly, R.G.A., from a Flying Officer (Observer); Second Lieut. E. S. T. Cole, Special Reserve. July 22nd, 1916: Second Lieut. R. T. Griffin, Special Reserve; Second Lieut. G. J. Harter, Special Reserve. July 25th, 1916: Second Lieut. J. C. Hodges, R.G.A., Special Reserve; Second Lieut. (Temporary Lieut.) W. H. S. Chance, Worc. R. (T.F.).

Memoranda.—Second Lieut. H. V. Rabagliati, from R.F.C., Special Reserve, to be Temporary Second Lieutenant on General List, for duty with R.F.C.; July 21st, 1916.

To be Temporary Second Lieutenants for duty with R.F.C.: Warrant Telegraphist F. K. Crosbie-Choppin, from R.N.R.; July 29th, 1916. Aug. 8th, 1916: Cadet Officer K. K. Muspratt, from Sherborne School O.T.C.; Cadet Officer S. E. Dreschfeld, from Sherborne School O.T.C.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: C. M. Crow, J. H. Ryan, C. P. V. Roche, F. D. H. Sams, R. M. Timmis, D. E. Nicolle, H. W. Sellars, G. F. Hughes, J. Mitchell, G. E. Upton.

A. E. Blackmore to be Second Lieutenant; July 7th, 1916. To be Second Lieutenants (on probation): A. B. D. Lang; July 1st, 1916. G. Craig; July 15th, 1916. July 24th, 1916: H. Loeffler, D. N. Keith, P. B. Harris, A. T. Shaw. W. B. Brett; July 25th, 1916.

The Christian names of Second Lieut. (on probation) G. P. Kay are as now described, and not as in the *Gazette* of May 22nd, 1916.

The following appeared in the *London Gazette* of Aug. 18th:—

Flying Officers.—Second Lieut. A. S. Butler, R.F.A. (T.F.); June 19th, 1916. June 22nd, 1916: Second Lieut. (Tempo-

rary Lieut.) R. Burleigh, R.E. (T.F.); Second Lieut. W. L. Scandrett, Special Reserve.

Flying Officers (Observers).—Lieut. H. Turner, R.A., and to be seconded; March 17th, 1916. Temporary Lieut. R. Erskine, 7th R. Sco. Fus., and to be transferred to the General List; Aug. 3rd, 1916.

Assistant Equipment Officers.—Temporary Lieut. F. G. Wilson, General List, from a Flying Officer (Observer); July 28th, 1916. July 31st, 1916: Second Lieut. T. P. Whitcomb, Essex R. (T.F.); Temporary Second Lieut. J. Clinkskill, General List; Second Lieutenants, Special Reserve: A. H. Meldrum, G. L. Bennet, R. N. Corah, P. Maggs; Temporary Second Lieut. B. W. Morriss, General List; Second Lieutenants, Special Reserve: R. H. Tweedy, G. E. Upton; Temporary Second Lieut. A. Mackay, General List; Aug. 1st, 1916.

Memoranda.—The under-mentioned N.C.Os. and men to be Temporary Second Lieutenants (on probation) for duty with the R.F.C.: Pte. L. Waight, from 2nd Bn., Canadian Mtd. Inf.; July 9th, 1916. L.-Corpl. C. W. Adkin, from R.E. (T.F.); July 17th, 1916. 1st Class Air-Mechanic G. M. G. Bibby, from R.F.C.; July 19th, 1916.

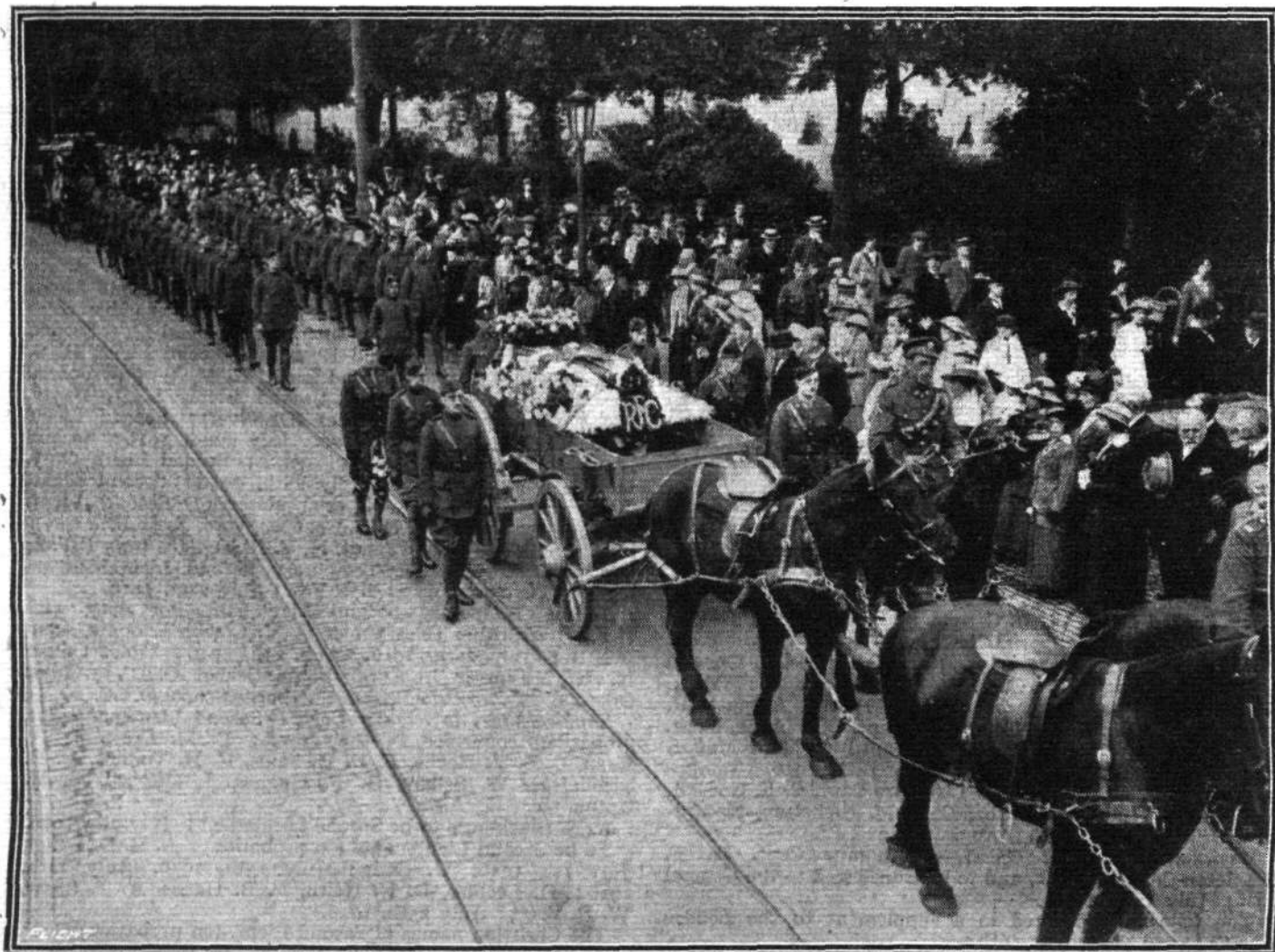
The following appeared in a supplement to the *London Gazette* issued on August 19th:—

Squadron Commander.—Major S. Smith, E. Anglian Brig., R.F.A. (T.F.), from a Flight-Commander; July 30th, 1916.

Flight-Commanders.—From Flying Officers, and to be Temporary Captains whilst so employed: Lieut. D. A. L. Davidson, Special Reserve; June 1st, 1916. Temporary Lieut. S. W. Price, General List; Aug. 4th, 1916. Second Lieut. F. E. Goodrich, Special Reserve; Aug. 6th, 1916. Temporary Lieut. D. K. Johnstone; Aug. 8th, 1916.

Flying Officers.—July 20th, 1916: Second Lieut. (Tempo-

rary Lieut.) R. W. A. de H. Haig, Glamorgan R.G.A. (T.F.); Second Lieut. J. H. Ryan, Special Reserve; Second Lieut. F. D. H. Sams, Special Reserve; Second Lieut. H. W. Sellars, Special Reserve. July 21st, 1916: Capt. H. R. Raikes, E. Kent R., Special Reserve, from an Assistant Equipment Officer; Second Lieut. F. H. Creasy, R. Wilts. Yeo. (T.F.); Temporary Second Lieut. A. F. Livingstone, K. R. Rif. C., and to be transferred to the General List. July 23rd, 1916. July 24th, 1916: Lieut. (Temporary Capt.) O. L. Whittle, S. Lan. R. (T.F.); Lieut. (Temporary Capt.) A. Skinner, S. Lan. R. (T.F.); Second Lieut. (Temporary Capt.) G. M. Croil, Gord. Highrs. (T.F.). July 25th, 1916: Temporary Second Lieut. W. G. D. Turner, Middx. R., and to be transferred to the General List; Second Lieut. (on probation) S. McClure, N. Staff. R., Special Reserve, and to be seconded; Second Lieut. (on probation) B. A. Peck, R.F.A., Special Reserve; Second Lieut. C. M. Crow, Special Reserve; Second Lieut. A. P. Donnell, Northd. Fus., and to be seconded; Second Lieut. R. H. Timmis, Special Reserve; Lieut. (Temporary Capt.) R. O. C. Bush, R. Dub. Fus., to be seconded, and to relinquish his temporary rank. July 26th, 1916: Second Lieut. A. F. T. Ord, W. York. R., Special Reserve, and to be seconded; Second Lieut. C. P. V. Roche, Special Reserve. July 28th, 1916: Lieut. L. N. Sutherland, Bord. R., and to be seconded; Temporary Second Lieut. L. S. Ward-Price, Res. Regt. of 2nd L. Gds.; Second Lieut. J. Thwaytes, Bord. R., Special Reserve, and to be seconded; Second Lieut. R. E. Buckingham, Special Reserve; Temporary Second Lieut. A. L. Dunstan, General List; Second Lieut. D. H. Glasson, Special Reserve. July 31st, 1916: Temporary Second Lieut. A. J. O'Byrne, Lpool. R., and to be transferred to the General List; Second Lieut. M. H. Strange, R. Fus., and to be seconded.



THE FUNERAL OF LIEUT. IVAN CARRYER, OF THE EAST YORKS AND R.F.C., AT LEICESTER LAST WEEK.—Very great sympathy was shown in the district, where Lieut. Carryer was well known. Photo. shows the funeral procession on the way to the cemetery. The coffin was conveyed on an ammunition wagon, and the deceased's cap and sword were resting on it. In front was a wreath depicting the badge of the R.F.C. sent by the employees of the firm with which the deceased officer's father was connected.

The following appeared in a supplement to the *London Gazette* issued on August 21st:—

Staff Officer, 3rd Class (graded for pay as a Staff Captain).—Temporary Second Lieut. T. C. Macaulay, R.A., and to be Temporary Captain whilst so employed; May 26th, 1916.

Squadron Commander.—Capt. P. C. Maltby, R.W. Fus., from a Flight-Commander, and to be Temporary Major whilst so employed; Aug. 5th, 1916.

Flight-Commanders (from Flying Officers, and to be Temporary Captains whilst so employed).—Second Lieut. E. H. Johnston, Special Reserve; Aug. 3rd, 1916. Second Lieut. C. T. Latch, N. Midland R.G.A. (T.F.); Aug. 6th, 1916.

Equipment Officers.—Temporary Capt. R. H. Austin-Sparks, General List, from a Flying Officer May 27th, 1916. The appointment of Temporary Lieut. G. L. Wightman, General List, is antedated to June 1st, 1916. **From Assistant Equipment Officers and to be Temporary Captains whilst so employed.**—July 22nd, 1916: Temporary Lieut. G. H. Padley, General List; Second Lieut. (Temporary Lieut.) W. J. Shields, Essex R., Special Reserve. Aug. 1st, 1916: Or. and Hon. Lieut. J. E. Parkin, R.F.C.; Second Lieut. A. C. Gilling, Special Reserve; Second Lieut. R. S. Rumbold, Som. L.I. Or.-Mr. and Hon. Lieut. (Temporary Capt.) W. J. Ryan, R.F.C., from an Assistant to a Deputy Assistant

Director, and to retain his temporary rank whilst so employed; Aug. 1st, 1916. Lieut. F. A. G. Noel, Special Reserve, from an Assistant Equipment Officer, and to be Temporary Capt. whilst so employed; Aug. 12th, 1916.

Flying Officers.—July 28th, 1916: Temporary Second Lieut. W. H. Farrow, General List; Second Lieut. W. J. D. Vince, Special Reserve. July 29th, 1916: Second Lieut. J. Hay, Special Reserve; Second Lieut. J. D. Hewett, Special Reserve; Temporary Second Lieut. P. A. Wright, General List; Second Lieut. W. S. Shirtcliffe, Special Reserve; Second Lieut. E. H. Wingfield, Special Reserve. July 30th, 1916: Hon. Lieut. F. Facer, R.A.M.C. (T.F.), and to be Temporary Lieutenant; Second Lieut. T. C. H. Lucas, Suff. R., and to be seconded; Second Lieut. H. E. Startin, Special Reserve. Temporary Second Lieut. E. A. Worrall, Manch. R., and to be transferred to the General List; July 31st, 1916.

Memorandum.—Corpl. S. T. Smith, from R.F.C., to be Temporary Second Lieutenant, for duty with the Military Wing of that Corps; July 13th, 1916.

Supplementary to Regular Corps.—The under-mentioned Second Lieutenants (on probation) are confirmed in their rank: C. N. Russell, W. S. Shirtcliffe, S. G. Howard, W. J. D. Vince, E. H. Wingfield, H. E. Startin, A. L. Cockburn, R. H. Tweedy, P. Maggs, G. L. Bennet, R. N. Corah, J. D. Hewett, R. E. Buckingham, J. Hay.

THE ROLL OF HONOUR.

THE Secretary of the Admiralty announces the following casualties:—

Injured.

Flight Sub-Lieut. E. A. Pearson, R.N.

Accidentally Injured.

Flight Lieut. P. Legh, R.N.

Flight Sub-Lieut. F. P. Reeves, R.N. (August 14th).

Flight Sub-Lieut. A. A. Wallis, R.N. (August 14th).

Correction: **Prisoner of War in Germany.**

Flight Sub-Lieut. F. J. Bailey, should read

Flight Lieut. F. J. Bailey, R.N.

The following casualties have been officially announced by the War Office:—

Killed.

Capt. J. O'Brien, R.A.M.C., attd. R.F.C.

Second Lieut. H. M. B. Law, Royal Flying Corps.

10068 Corpl. J. R. Stringer, Royal Flying Corps.

Wounded.

Lieut. J. B. Brophy, Royal Flying Corps.

Second Lieut. S. E. Cowan, Royal Flying Corps.

Capt. S. G. Gilmour, Royal Flying Corps.

Capt. S. Grant-Dalton, D.S.O., Yorks. Regt., attd. R.F.C.

Second Lieut. I. M. Harris, K.R.R.C., attd. R.F.C.

Lieut. G. H. A. Hawkins, Manchester Regt., attd. R.F.C.

Lieut. D. K. Johnstone, Royal Flying Corps.

Capt. R. H. D. Lee, Norfolk Regt., attd. R.F.C.

Second Lieut. C. F. Overly, R. Fus., attd. R.F.C.

Second Lieut. L. W. B. Parsons, Royal Flying Corps.

Capt. E. H. Petre, Suffolk Regt., attd. R.F.C.

Second Lieut. L. C. Pockney, R.F.A., attd. R.F.C.

Second Lieut. E. H. Pullinger, Royal Flying Corps.

3836 Corpl. W. G. Moore, Royal Flying Corps.

4581 Corpl. A. Reed, Royal Flying Corps.

6717 2nd Class Air-Mechanic A. Stanley, R.F.C.

Previously reported Missing, now reported Wounded.

Second Lieut. A. H. Forester, Queen's (R.W. Surrey), attd. R.F.C.

Missing.

Second Lieut. C. W. Blain, Royal Flying Corps.

Second Lieut. C. Geen, London Regt., attd. R.F.C.

Second Lieut. C. D. Griffiths, R. Welsh Fus., attd. R.F.C.

Second Lieut. J. W. Gunton, Somerset L.I., attd. R.F.C.

Capt. E. W. Leggatt, Wilts Regt., attd. R.F.C.

Lieut. J. A. Mann, D.S.O., Cameronians (Scott. Rif.), attd. R.F.C.

Second Lieut. R. M. S. Shepherd, R. Irish Regt., attd. R.F.C.

Capt. D. M. V. Veitch, Indian Cavalry, attd. R.F.C.

Prisoner of War.

Captain S. C. Winfield-Smith, E. Surrey Regt., attd. R.F.C.

Previously reported Missing, now reported Prisoners of War.

Capt. W. W. Jefferd, Middlesex Regt., attd. R.F.C.

Lieut. W. O. J. Tudor-Hart, North'd. Fus., attd. R.F.C.

Previously reported believed Taken Prisoners of War at Kut-el-Amara, now reported Prisoners of War.

Second Lieut. C. H. Courthope-Munroe, I.A., Res. of Off., attd. R.F.C.

Capt. S. C. B. Munday, Oxon and Bucks L.I. and R.F.C.

Capt. T. R. Wells, Infantry, attd. R.F.C.

Honours for the R.F.C.

In a supplement to the *London Gazette*, issued on August 20th, it was announced that His Majesty the King had been graciously pleased to approve of the appointment of the under-mentioned officer to be a Companion of the Distinguished Service Order, in recognition of his gallantry and devotion to duty in the field:—

Temp. Sec. Lieut. A. L. GORDON-KIDD, Special List and R.F.C.

For conspicuous gallantry, skill and determination. On one occasion he dived his machine from a height of 7,500 ft. to 900 ft., and placed a bomb on the enemy's ammunition train, which set it on fire and blocked the line. A few days afterwards he performed another very hazardous undertaking well within the enemy's lines, whilst exposed the whole time to all descriptions of heavy fire.

It was also announced that His Majesty the King had been graciously pleased to confer the Military Cross on the under-mentioned officers in recognition of their gallantry and devotion to duty in the field:—

Lieutenant O. T. Boyd, Indian Army and R.F.C.

For conspicuous gallantry when on a bombing raid in unfavourable weather. He descended to less than 1,000 ft. and bombed a train, which he afterwards attacked with his machine gun, though heavily attacked by rifle and machine-gun fire.

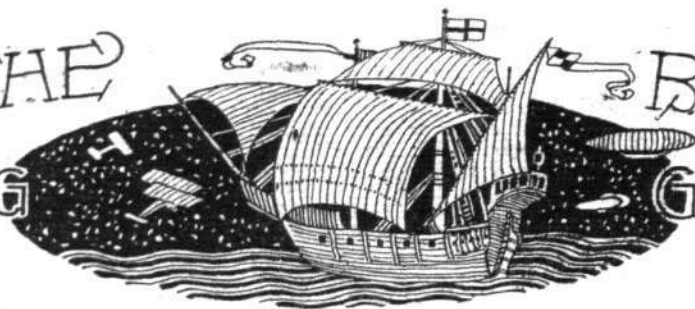
Lieutenant R. G. GOULD, R.F.C., Special Reserve.

For conspicuous gallantry and tenacity. While reconnoitring he was attacked by two enemy machines, and, though wounded in the leg, drove one down and the other away. He then continued his work, though heavily fired at by anti-aircraft guns. Finally he was compelled by weakness to return, and on landing was taken to hospital.

Sec. Lieut. H. A. TAYLOR, R.W. Kent Regt. and R.F.C.

For conspicuous gallantry when on a bombing raid in unfavourable weather with Lieutenant Boyd and two other pilots. He descended to less than 1,000 ft. and bombed a train, derailing several trucks.

FROM THE
FLYING



BRITISH
GROUNDS

J.B.

Beatty School, Hendon.

THE following pupils were out during last week: Messrs. Cuthbert, Hathaway, Le Champion, Earl, Mitchell, Rudd, Turner, Towson and Austen.

The instructors were Messrs. G. W. Beatty, G. Virgilio, L. L. King, A. E. Mitchell and H. Fawcett; the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes, and Caudron dual-control and single-seater tractor biplanes.

Certificates were taken during the week by Messrs. B. J. Earl, D. Mitchell, and P. Rudd (on Caudron machine), and V. G. Austen and G. le Champion (on Beatty-Wright machine).

Hall School, Hendon.

In spite of very windy and wet weather and thunderstorms, the following pupils were able to put in practice between the showers last week: With Stanley G. Cownie: Messrs. Mayer, Course, Yuill and Bateman. With Fred. J. Glegg: Messrs. Stamps, Barton, Henley and Flight Sub-Lieut. Malden.

Lieut. Packman and Messrs. Orton, Cordner, Rayne and Gudger, pupils with Mr. Cecil M. Hill, should soon qualify.

Hall (Government type) tractors in use.

London and Provincial School, Hendon.

► PUPILS doing straights last week: Messrs. Quayle, Davy, and Sellars. Circuits and eights: Messrs. Fox, Randell, Mander, Lewis, and Rogers.

Instructors: Messrs. W. T. Warren, M. G. Smiles, W. T. Warren, Jun., and P. G. Allen.

Royal Aero Club Certificate taken by Mr. G. H. Rogers.

Ruffy-Baumann School, Hendon.

SCHOOL out last week: Wednesday, Thursday, Friday, Saturday and Sunday. Pupils with instructors: Messrs. Hayes, Babington Smith, West, Holmes, Carr, Trubridge and Fanshawe. Doing straights or circuits alone: Messrs. West and Holmes.

During the week Mr. West took his certificate in very good style.

Instructors: Ed. Baumann, Félix Ruffy, Ami Baumann and André Thomsen.

50 and 60 h.p. Ruffy-Baumann tractor biplanes in use.

Passengers carried during the week by Ami Baumann and André Thomsen.

Bournemouth School.

PUPILS rolling alone last week: Messrs. Davies, Constant, Lloyd-Owen, Holland, Wilmott, Montgomery, Wingfield and Ross.

Doing straights alone: Messrs. Brandon, Hammersley, Pritt, J. B. Smith, Fenn, Hinchliff and Adamson. Half circuits alone: Messrs. O. Wilson, J. Wilson, Daniel, and H. Smith.

Instructors: Messrs. S. Summerfield and E. Brynildsen. Two 35, 45 and 60 h.p. Caudrons in use.

Owing to the exceptional windy weather no school work of any importance was carried out. Several pupils are, however, almost ready to take their "tickets."

Mr. Summerfield gave a very interesting exhibition of flying on Saturday afternoon in a high wind of from 45 to 50 miles an hour.



Group of pupils at the Ruffy-Baumann School, Hendon, who have taken their tickets there.—(1) Mr. J. de Balme, (2) Mr. M. Johnstone, (3) Mr. J. Beebee, (4) Mr. S. Wilson, (5) Mr. J. Edgar, (6) Mr. Keith Muspratt, (7) Mr. G. Straus (Belgian subject), (8) Mr. Philip Wood.



LAST Saturday's visitors to Hendon saw some good flying of a varied character, including looping displays. Looping, in fact, is becoming quite a regular feature of the air work at Hendon now. M. G. Smiles and "Wee Willie Warren" did the looping turns on the new L. and P. tractor biplane. On one occasion the last-named pilot, with Mr. Fletcher—who, by the way, must form part of the equipment of the machine, since he is rarely out of the passenger's seat—as passenger, "went mad" above a garden party that was in progress away yonder just outside the aerodrome, and performed all sorts of antics. That this unexpected exhibition was appreciated was evident from the fact that as the two turned back to the aerodrome the sounds of cheers and clapping of hands floated up to their ears above the noise of the engine. L. L. King went up on the Beatty-engined Wright and executed

some nice banking. Several passengers were taken on the 80 h.p. three-seater Grahame-White biplane by the Grahame-White pilots, C. Pashley on one occasion making a fine high flight together with some well-banked turns and a very graceful landing. During the afternoon several Service machines passed over the aerodrome at a great altitude, whilst the large Curtiss tractor (model R2 type) and a B.E. 2 C made numerous ascents from the aerodrome. H. Sykes, who had flown over from Hanworth on the Martinsyde the previous day, started out with a lady passenger for Shepherd's Bush, where Messrs. Waring and Gillow, Ltd., were holding a Sports Day, but, owing to some engine trouble, was delayed in getting away. An H.P. "Baby" also paid a visit to the aerodrome and created some considerable interest, especially with its remarkably slow and flat glide.

THE FLYING SERVICES FUND—Administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained

from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.

Subscriptions.		£	s.	d.
Total subscriptions received to August 15th, 1916		10,815	8	7
Collected at the Westland Aircraft Works, Yeovil (Forty-fourth contribution)	..	0	18	0
Employés of Ruston, Proctor, and Co., Ltd. (Tenth contribution)	1	10	0
Total, August 22nd, 1916		10,817	16	7

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

ANSWERS TO CORRESPONDENTS.

If in doubt about anything aviatric, write to "FLIGHT" about it. G. O., R.N. (Maidenhead).

We quite appreciate your difficulty in obtaining any definite information on the pitch ratio of propellers, since this varies very considerably, according to the type of machine and engine used. In the first place, the diameter of an air screw is more frequently determined by constructional considerations than by attempts at maximum aerodynamic efficiency. As regards the pitch of the air screw, this depends, of course, on the speed of the aeroplane on which the screw is to be employed, and on the normal speed of revolution of the engine; and also on whether the screw is to be driven direct or through reduction gearing. It is impossible to lay down any hard and fast rules, but a few examples may be of assistance in showing how all the various values of the pitch ratio given by the authors mentioned in your letter may be correct in particular instances.

For example, suppose the machine in question is a fast scout, designed to do a speed of 110 m.p.h. If the engine revolves at 1,200 r.p.m. and direct drive is employed, the pitch of the air screw would be about 8 ft. The diameter permissible on a machine of this type would be in the neighbourhood of 8 ft., thus giving a pitch ratio of 1.

Again, on a machine like the Maurice Farman, doing about 70 m.p.h. and having a Renault engine revolving at 1,800 r.p.m. driving the screw through a 2 to 1 reduction gearing, the pitch would be about 6.8 ft. or 7 ft. The diameter of the propellers fitted is, we believe, about 9 ft. 6 ins., giving a pitch ratio of 0.73.

If we take a B.E. also using a Renault engine and running the screw at half engine speed, designed for a speed of, say, 95 m.p.h., we have a pitch of about 9.2 ft. With the standard height of undercarriage the permissible diameter is about 9 ft., and the pitch ratio therefore 1.2 approximately. The above figures should not be taken as being absolutely

correct, but are merely intended to show the reasons for divergencies in pitch ratios.

H. C. B. (King's Lynn).

There are various reasons why tractor screws differ from propellers or "pusher" screws. Thus, for a given forward speed of an aeroplane the tractor screw has a greater velocity of entry into the air than has a propeller, on account of the fact that the wings of the machine exert a certain amount of viscous drag upon the air. If, therefore, the screw is shifted from the front of the wings to the back, this will mean that it will then have to be run at a greater slip, and consequently at a smaller efficiency.

J. M., R.F.C.

The phenomena known as "pockets" or "bumps" are not in reality "holes" in the air, but are rather to be considered as currents or various direction gusts. For instance, one may speak of head gusts, rotary gusts, up gusts, rear gusts, and down gusts. The head-on gust virtually increases momentarily the air speed of a machine, and therefore results in an upward swoop. The up gust tends to lift the machine bodily, while, of course, a down gust causes it to drop. A rear gust also tends to cause the machine to drop, since it has the effect of decreasing the relative speed of the machine through the surrounding air. For instance, a machine flying in a calm at 70 m.p.h., and suddenly entering an air current of a velocity of 30 m.p.h., blowing in the same direction as that of the machine, will actually have its relative speed reduced to 40 m.p.h., resulting, of course, in a loss of lift, which must be counteracted by using the elevator, thus increasing the angle of incidence of the wings. Little is at present known regarding rotary gusts, but it is conceivable that a machine entering such a whirl would be affected both by the whirl and by the linear velocity generated by it, and therefore experience a greater disturbance than if it had met a pure head-on gust.



SPEEDING southwards, a passenger in a luxurious car, I leant back in the soft cushions with queer feelings, for I was being hurried to the home of a Dreamer; was to meet another, and I had the sensation of being stillborn—hurrying to meet myself.

The car sped over the smooth ground, apparently without effort, and my companions respected my reverie. Hardly a word was spoken, yet I seemed to feel their looks upon me. I felt captured. It seemed to me that a well laid plot had matured, and that here was I, passively rebellious, being taken by gentle force to where? to what?

I had the feeling that I was some strange animal captured in the wild, being taken to view my counterpart in captivity, or, was it *vice versa*? There seemed to be a suppressed expectant atmosphere integral to the car; an emission from the bodies of my companions. There was the air of taking a prize bantam of fighting stock to be placed in the cage of another of reputation, the pleasure of those concerned being obtained by stepping back to watch whether they would rub combs in all friendliness, or strut around, heads thrown back, awaiting opportunity to strike.

In the distance the aeroplane was riding the wind, and as I looked I wondered whether I was about to see something that should have been in the early days, before these graceful machines stretched their white wings to the element, or whether I was about to witness something that would make those far-stretched wings things of the past. For that which I was about to behold as the dreams of a Dreamer in the concrete, was none other than the flapping wings, a machine of birdlike form which, with spread pinions, should soar into the air, majestic as any eagle.

The prize bantams did not fight, all association of environment was against it. The Dreamer was a dreamer, and looked it; my counterpart was of myself. Not in rosy chamber did I find him. No Cupids undressed in flimsy gauze rode astride the clouds on painted ceiling, no Arabian perfume greeted the nostrils.

The dream chamber was a garden, the ceiling was heaven, the perfume that fascinating odour given out by black currant bushes laden with juicy fruit.

The machine with its flapping wings stood amongst the potatoes; cabbages waved their heads all around. I could have laughed—how incongruous, how impossible, yet how glorious. It was delightful; I could have shouted hurrah for sheer joy, had I not been suspicious that tears might well up to stifle the final effort. For here was the result of years of patient dreaming—a machine with two beautiful birdlike wings stretched out over the potatoes.

In the shade, under the apple trees, there stood a camp bed with overlay above spring mattress, and near by a table lumbered up with camp equipment. Here one could lie with that pair of wings stretched

in full sight, and here, no doubt, had lain that dreamer of dreams, seeing in his imagination the day when machines with flapping wings should take the air.

Nor am I prepared to take responsibility that he shall not see the realisation of his dreaming, for there is much in it that cannot be lightly thought of, much that embodies a very great deal more than possibility.

I saw the machine at work, partly chained to the ground as it was. I saw its inventor turn the wheel—cumbersome and makeshift, that imparted action to the cranking movement—and I saw the wings rise and fall in perfect rhythm, and with lifelike movement, and I saw the machine, with a 28-lb. weight attached as extra load, rise a foot into the air with every downward sweep of the wings.

Let it be remembered that this was but a model, clumsily made of wood and iron, heavy for itself, laden with bars and chains and gear wheels, and that the far end of the power shaft was attached to a post fixed to the ground. And that the wings were but of some 5 ft. in length, with, perhaps, half that chord.

The man power as applied could not, in the circumstances, be applied regularly, and the wings sometimes took up a slightly uneven movement in consequence; but as the wings rose and fell, driving the air out from beneath them, the potatoes and cabbages waved and nodded their heads in the artificial breeze, appearing to register their vote in the affirmative to the unspoken question of us who stood around wondering.

There could have been nothing in turning the crank, yet like unto children we all had to have our turn at the wheel, watching the wings feather upward, offering no resistance, to flatten out at the top of the stroke and bear gracefully downward to vegetable encouragement.

Turning cranks is warm work on a hot day, and iced ale and cigarettes, partaken of under shady apple trees, very cooling and conducive of chatter. And so we all sat around theorising over possibilities and probabilities, seeing difficulties where there were none, and digging out some that were latent, withal coming away, if anything, rather more undecided than when we went.

For such is the power of these things which we approach in a spirit of gentle, if aggressive tolerance, these things which on contact with, we have to admit in everyday parlance, may have "something in them," that there is a kind of aftermath of indecision, a time when we all hold our tongues and try to remember what it was we said before the exhibition.

I am prepared to be surprised. I am prepared to see in the future machines of low power propelling their way on different principles to that which we know to-day.

In these days we must be prepared for anything. It may be that one day I shall flap cheerfully to business.

AVIATION IN PARLIAMENT.

No Quarterly Insurance Policies.

MAJOR NEWTON, on August 14th, asked the Prime Minister whether he will consider the advisability of having a fixed premium covering all risk from hostile attack, whether from the sea or air, so that owners of property on the East Coast may no longer be compelled, merely in consequence of their geographical position, to pay an extra premium as compared with owners of other property; whether the present rate of insurance against damage from the air is ample to cover all war risks; and whether arrangements can be made for these policies to be renewable quarterly at a proportionate premium, failing which will he announce that in the event of the risk ceasing during the currency of a yearly premium a proportionate return of premium will be made.

Mr. Harcourt: The Prime Minister has asked me to answer this question. I fear it would not be possible to abolish the distinction between the two kinds of policies provided by the Government scheme, or to say with any confidence at this stage whether a lower rate would or would not cover all risks. I am advised that the issue of quarterly policies, except as provided in the scheme, would be open to serious practical objections, and that it would not be possible now to give any undertaking as to return of premium.

Non-Poisonous Dope.

MR. ROWLANDS, in the House of Commons on August 8th, asked the Financial Secretary to the War Office—(1) whether, in the contracts given to the various aeroplane manufacturers there is a specification of the particular dope to be used; if so, can he say what are the special dopes so named, or are the manufacturers allowed to use the non-poisonous dopes upon the market; (2) the Secretary to the Admiralty whether, in the contracts given to the various aeroplane manufacturers, there is a specification of the particular dope to be used; and, if so, can he say what are the special dopes so named, or are the manufacturers allowed to use the non-poisonous dopes upon the market?

Major Baird (representing the Air Board): I have been asked to deal with these questions. Considerable progress has been made in the production of satisfactory dopes of a non-poisonous kind, and the Admiralty and the War Office have recently issued instructions to contractors specifying various non-poisonous dopes which meet their requirements. The effect of these instructions is that the use of dopes containing tetrachlorethane is no longer permitted for the purposes of either the Naval or the Military Air Service unless the non-poisonous dopes cannot be obtained. Any cases of failure of supply of the non-poisonous dopes will be made the subject of special inquiry. Of the eight doping schemes approved, seven are supplied by the trade.

Mr. Rowlands: May I ask the hon. and gallant member whether the other dopes used by private manufacturers are allowed to be used where the demand is for them?

Major Baird: Subject to their complying with the specifications which have been circulated, of which I shall be happy to send my hon. friend a copy.

Dover Anti-Aircraft Corps.

MR. R. McNEILL asked the Secretary of State for War if it has been decided to disband the Dover Anti-Aircraft Corps and to replace it by a corps drawn from London Electrical Engineers; whether the Dover Anti-Aircraft Corps has been serving for twenty months, during which it has been repeatedly congratulated on its efficiency and never censured; whether he is aware that the intimate local knowledge possessed by the men is of great value in enabling them to distinguish the sound of hostile aircraft from similar local noises, and that an incentive to zealous service is afforded by the fact that as a local corps the men are charged with the protection of their own homes; whether on the only three occasions when Zeppelins have approached Dover the corps detected the enemy and illuminated the aircraft so as to give full opportunity for the anti-aircraft gunners, who were thus enabled on one of the three occasions to damage the invader; whether the intended change will involve considerable increased expenditure; and if he will say why, under these circumstances, the change is to be made?

Mr. Forster: The disappearance of this corps, which was composed partly of naval active service ratings and partly of local men who were able to give only part-time service, has

resulted automatically from the introduction of the Military Service Act, and from the transfer of the anti-aircraft defences from the Navy to the Army. The result is that the naval active service ratings have been handed back to the Admiralty, by whom they were required; the members of the corps eligible for general service have been enlisted for general service, and those eligible for home service only have been enlisted in the London Electrical Engineers and will be employed as far as possible at Dover. The good work done by this corps in the past is fully recognised.

Mr. McNeill: Does my hon. friend realise that there is very great local dissatisfaction?

Mr. Forster: I am very sorry to hear it, but I am afraid under the circumstances which I have narrated in my answer the proceedings were inevitable.

Cost of Tuition in the Services.

COMMANDER BELLAIRS, on August 15th, asked the First Lord of the Admiralty if he will state the average cost of tuition in flying at Government establishments of pupils for the Royal Naval Air Service up to the obtaining of their brevets, including a fair proportion of aerodrome expenses, maintenance and wastage of aeroplanes and engines?

Dr. Macnamara: It would not be possible to give the information asked for without obtaining details from the local establishments with much subsequent investigation and collation at the Admiralty. In view of the present pressure of urgent executive work, it is regretted that it is not practicable to undertake this additional work.

Co-operation between the Services.

MR. BENNETT-GOLDNEY asked the Prime Minister whether he will take steps to put an end to the still existing lack of co-operation between the Royal Naval Air Service authorities and the Military Air and Anti-Aircraft Services; if he is aware that only recently, in substituting the military authority for the naval authority at an important station now moved somewhat further inland, the efficiency of the equipment has been impaired by replacing the more powerful electric projectors by others of a less power and by the provision of obsolete Boer war guns of a harmless nature, beyond a very short range; whether his attention has been called to the inefficiency of our anti-aircraft defences when, during one of the recent Zeppelin raids, the projectors at an important station were found to be quite inadequate as they could only flash their lights effectively to a low altitude, and that although such anti-aircraft guns as had been provided fired incessantly none of the shells got anywhere near to their objective; and, in these circumstances, if he will consult with his naval and military advisers and ask them to point out to their respective Departments that, although the public is willing to make any necessary sacrifice, they are altogether opposed to the present lack of co-ordination between the two Services which still continues to minimise the effectiveness of our anti-aircraft defences as a whole?

Major Baird: In the present case no question of co-ordination or lack of co-ordination between the two Services arises, for the reason that the guns and searchlights of the place which I have been privately informed by my hon. friend that his question refers to, though originally in the hands of the Admiralty were transferred from the Admiralty to the military authorities, and are now under the control of the Department responsible for Home Defence. I have made careful inquiry, and am assured that the searchlights now employed are of the same type as were in use when the defence was in the hands of the naval authorities. No guns have been removed except on replacement by others of a more efficient kind.

Single Men at the R.A.F.

MR. CHARLES DUNCAN, on August 16th, asked the Financial Secretary to the War Office whether he is aware that at the Royal Aircraft Factory, Farnborough, married men are being discharged, while numbers of single unskilled men are being retained; and whether, in view of the dissatisfaction being caused by this action, he will investigate the matter with a view to securing more equal treatment?

Mr. Forster: No, Sir. I am informed that single unskilled men are only being retained in a few cases, and that these will be dispensed with as soon as suitable substitutes can be obtained.

THE ADVISORY COMMITTEE'S ANNUAL REPORT.

LAST week the Annual Report of the Advisory Committee for Aeronautics for the year 1915-16, presented to the Rt. Hon. H. H. Asquith, M.P., First Lord of the Treasury, was published as a White Paper. We reproduce the Report in full below:—

"SIR,—A large increase in the amount and extent of the work carried out under the control of the Advisory Committee for Aeronautics has taken place as a result of the war.

"Mr. Tennyson d'Eyncourt, Director of Naval Construction, was recently appointed an additional member of the Committee.

"Some new problems have required attention during the course of the past year, but in the main the work has been directed to meeting the immediate needs of the Services in regard to the design and development of aircraft. The main principles to be followed in design, and the more immediately necessary general data required in their application, had been determined previously, but the developments in detail have been very numerous, and the detailed information required as to the aerodynamic properties of a number of different types of machine, with the proposed modifications arising in the course of design, have entailed a great amount of experimental work. Progress with a number of investigations of more general character, and of considerable importance, has in consequence been unavoidably delayed, but the increased facilities recently provided, to which reference is made below, will, it is hoped, render possible a more rapid advance with researches relating to the general aerodynamic characteristics of the aeroplane, which have a direct bearing on the improvement of all types of machine.

"*Provision for experimental work at the National Physical Laboratory.*—The fundamental necessity, in the development of aircraft, of proceeding on the basis of exact knowledge derived from accurate investigation under experimental conditions is now clearly recognised in this country, and the demand for exact information has led to continuous growth in the provision made for experimental work at the National Physical Laboratory. This provision now covers four main branches of research: (1) Aerodynamics, including the determination of the forces acting on models of aircraft, and of their various parts, as well as general investigation of the motion of bodies through fluids. (2) The study of fabrics for use in the construction of aircraft, and of methods of proofing and protection, the examination of dopes, varnishes, protective pigments, &c., and other chemical work. (3) The investigation of materials, especially light alloys, for use in aircraft construction, and their production under manufacturing conditions. (4) The examination of special questions which arise in connection with airships or seaplanes in relation to their use at sea. In addition to these four principal sections of the work, a large number of special questions receive attention from time to time at the Laboratory, e.g., those relating to instruments or accessories for use on aircraft, the investigation of breakages, &c.

"The principal equipment available, at the commencement of the period under review, for research in aerodynamics, comprised three air channels—a 3-ft., a 4-ft. and a 7-ft.—together with a whirling arm for tests of propellers, and some small air and water channels for the photographic investigation of fluid motion. Under the conditions existing these have not been found sufficient during the past year to enable the requirements of the Services to be met, and, at the urgent request of the Admiralty and War Office, additional channels have recently been constructed, and are now in use. The 7-ft. channel had been found of great service in general experimental work, and, after careful consideration, it was arranged that a second 7-ft. channel should be provided, as well as another 4-ft., together with the necessary machine tools for model-making, and other incidental equipment. New buildings had to be erected for these channels, as well as for the increased office and workshop accommodation necessary. The erection of these buildings, the construction of the channels, and the provision of much of the equipment was undertaken, with the consent of the Treasury, by the Office of Works, and the Committee is much indebted to Mr. Baines, the Principal Architect of the Office of Works, for the rapid and successful completion of the work. The necessary provision has been made by the Treasury for the increased staff required for working the new channels.

"Some additions to the staff and equipment have also been necessary in the Departments dealing with fabrics and

chemical work, and light alloys, respectively. The rolling mill, to which reference has been made in previous reports, has been at work for some time, and its value has been very fully demonstrated during the past year.

"By express desire of the Admiralty, provision has also been made for a considerable increase in the experimental work, in connection with seaplanes, carried out in the William Froude National Tank.

"As a result of the experience gained with the earlier channels, some improvements have been introduced, in the new equipment, in the design of the channels and of the measuring apparatus employed. Continued experience has confirmed the accuracy and convenience of the methods of measurement adopted. A recent report of the Smithsonian Institution states that the Massachusetts Institute of Technology, after careful study of existing channels in other countries, has adopted in its Aeronautics Laboratories a channel and balance of the N.P.L. type, with but slight modifications. Drawings of the balance for the 7-ft. channel have also recently been furnished, at their request, to the Navy Department at Washington.

"*Experimental work in aerodynamics.*—The work done in the air channels has been largely directed to the determination of data immediately required for purposes of design. A considerable amount of information of general value has, however, been obtained and will be published later. Use of the 7-ft. channel has enabled the range of values of u/v at which experiments are conducted to be appreciably extended, thus throwing further light on the exact numerical relation between the full scale and model coefficients which define the wind forces. Experiments on spheres have been made, both in the wind channels and in a natural wind, and the results compared with those obtained in other laboratories, especially those of Eiffel and Prandtl. The urgency of other work has, however, prevented the complete interpretation of the varying results obtained for spheres of different sizes, at different wind-speeds: it is hoped that opportunity will arise later of carrying to a successful conclusion this investigation, which is of great theoretical interest and may throw light on other questions of more immediate practical importance. Similar series of experiments have been conducted on struts and fair-shaped wires, as well as on wing forms; while the effect of change of scale on the region of unstable flow has been examined for aerofoils of special type.

"Much time has been devoted to measurements of the wind-forces on complete machines, and examination of the results of modification of individual parts. The results thus obtained will be of general interest, and of importance in future design.

"A new apparatus for the measurement of moments has been designed and constructed, and enables higher accuracy to be attained than that hitherto employed.

"Apparatus has also been devised for measuring the velocity and direction of flow in the air current at any point in the neighbourhood of a model. This will facilitate the study of the velocity distribution and the character of the flow round models, and will assist in the explanation of observed variations in the wind-forces on auxiliary surfaces.

"Some further questions in connection with the stability of the aeroplane have been investigated. Continued application has been made of the theory previously developed, and some improvements in detail have been effected. In particular, the effect of the use of the controls has been examined.

"Experiments on models of kite balloons have been made, and the conditions affecting the equilibrium of more than one type examined. The stability of these balloons has also been investigated. The conclusions reached are of definite practical importance, and, when applied in practice, should overcome some of the difficulties hitherto experienced in the manipulation of kite balloons.

"*Air-screws.*—With a view to securing increased accuracy in the designing of air-screws to fulfil specified conditions, new apparatus has been designed for the testing of air-screws in a wind channel, and for determining the distribution of pressure over the blades. Careful comparison has been made between the results of air channel measurements on air-screws, and those obtained from experiments on the whirling arm. In connection with this work, close examination has been made into the degree of accuracy obtained in the experimental methods employed in tests of air-screws on the whirling arm. The result of these investigations was to

confirm the satisfactory character of the results obtained in the observations on the whirling arm, and to show that channel measurements on air-screws, under the conditions adopted, can also be relied upon to give accurate results. In view of the great saving of time and labour, it is proposed, in general, in future, to employ air channel methods in the testing of air-screws.

"The continued use of the existing air channels on more immediately urgent work has delayed somewhat the further prosecution of the experiments on air-screws. With the additional channels now available, it is hoped that it may be found possible to resume the investigation at an early date.

"*Strength of construction.*—The considerations affecting the views held as to the 'factor of safety' to which manufacturers should work in aeroplane design and construction, have been somewhat complicated by the introduction of new factors arising out of the conditions and dangers of active service in the field. The preliminary figure laid down by the Committee has, however, been found convenient in general as a basis for design. Considerable attention has from time to time been given to improvements in detail, and continued investigation into all questions affecting the strength and durability of the machine tends constantly to increased security. In particular, a number of cases, of theoretical interest, have been investigated of fracture or failure occurring owing to vibration originated by the engine or other cause, with synchronisation and resonance in the part affected.

"A large number of investigations have been carried out during the year, at the request of the Service Departments, into methods and processes employed in the construction of aircraft and engines. Among these may be mentioned the use of autogenous welding, the annealing of hard drawn steel tubes, methods of soldering in connection with light alloys, &c. Some of these investigations have led to important results of more general value.

"A suggestion was made to the Committee that certain Australian timbers exhibited special properties which might render them of value in aeroplane construction. By the courtesy of the Agent-General for Western Australia, specimens of some of these timbers are being placed at the disposal of the Committee, and will be submitted to trial.

"*Experimental work in the William Froude National Tank.*—A number of investigations in relation to aircraft have been carried out during the year in the Froude tank. In particular, the experiments on floats have been continued and extended. In view of the importance of this work, an urgent request was made by the Air Department of the Admiralty for increased facilities, and additions have accordingly been made to the staff and equipment, for which special provision has been granted by the Lords Commissioners of H.M. Treasury.

"*Fabrics.*—The work done by the 'fabrics' department of the Laboratory includes the examination of the strength, permeability and other properties of airship and aeroplane fabrics, the investigation of methods of gas proofing and waterproofing, and of dopes, varnishes, paints, &c. The work during the past year has been exceptionally heavy, and numerous matters have arisen requiring special investigation. The Committee is indebted to the Autotype Co. and to the North British Rubber Co. for assistance rendered in the experimental investigation of methods of proofing fabric, and of preventing deterioration.

"Interesting results have been obtained from the examination of fabrics exposed in the tropics. The experiments have been carried out with the co-operation of the Air Department of the Admiralty.

"*Light alloys for aircraft construction.*—The systematic study of light alloys for aircraft construction has been continued. In this connection, the experimental rolling mill recently provided, and referred to in previous reports, has been of the greatest value, and has enabled the examination of these alloys to be continued beyond the laboratory stage, under conditions closely approximating to those which arise in manufacturing practice, but with greater facilities for the precise control of the various factors affecting the quality of the product, such as the exact constitution of the alloy, the temperature of rolling, &c.

"A number of special questions relating to alloys have been referred to the Department for investigation, and it has been necessary to ask for an increase in the provision made for such work.

"*Special matters.*—Experiments have been carried out on the aerodynamic properties of bombs, and investigations and

calculations have been made with regard to the flight of bombs, with a view to increased accuracy of aiming. The Commandant of the Central Flying School has furnished valuable assistance and information to the Committee in this connection, from the results of experiments there undertaken.

"Questions connected with the aeroplane compass were laid before the Committee by the Superintendent of the Royal Aircraft Factory in the autumn of 1913. These led to an examination into a number of points connected with the use of compasses on aircraft, in which members of the Committee assisted, while a close study of the conditions affecting the aeroplane compass, with a view to its development and improvement, was undertaken at the Royal Aircraft Factory by Dr. Keith Lucas, F.R.S. As a result of these experiments, which commenced early in 1914, various modifications from the compass previously in use were suggested and adopted, and a type of instrument specially adapted for employment on an aeroplane under the varying conditions which arise in flight was ultimately produced and standardised. Fliers are much indebted to Dr. Lucas for the success attained in this investigation. The Committee desire also to thank the Admiralty Superintendent of Compasses for information recently furnished to them with regard to the type of compass adopted for naval use on aircraft.

"Other questions which have been the subject of special investigation relate to the properties of permanent magnets as affecting their use in magnetos, the design of sighting apparatus, both for bomb dropping and in connection with aerial musketry, &c.

"A number of special matters have been investigated at the request of the Board of Invention and Research and the Munitions Inventions Department. The Committee has also given assistance to these bodies in the examination of patents and designs submitted to them, relating to projected improvements in aircraft.

"*FULL SCALE WORK AT THE ROYAL AIRCRAFT FACTORY.*

"Full scale research by experiment and observation upon aeroplanes in flight has been continued, and written records of the flight path, both controlled and uncontrolled, have been obtained. Many improvements in engines, air-screws and controls can only be made as the outcome of experiment upon actual machines, and these tests occupy the larger part of the flying time of the necessarily restricted number of aeroplanes available.

"As regards aerodynamic qualities, it has become increasingly important to predict with accuracy the performance and stability of an aeroplane while it exists only in drawings, and to be able to arrange that the movement of its centre of lift, the size and position of fins, the position of its centre of gravity, &c., are such as to ensure that it shall have adequate stability and control.

"It has been possible, by the issue at the outbreak of war of complete working drawings, to obtain strong, stable and serviceable aeroplanes in quantity from firms who had no previous experience of aircraft building.

"By the analysis of observations taken in experiment upon aeroplanes in the air in climbs, glides and level flights, progress is being made towards determining the aerodynamic characteristics of the aerofoil and other parts, so that a guide may be available for correctly interpreting the model results and linking them with the full scale data.

"*Strength of construction.*—The value of strength and good construction in saving aeroplanes from damage and reducing the amount of work required for their efficient upkeep in the field has been fully borne out by the experience of the Expeditionary Force. In view of considerations of safety of a different kind, which render necessary the sacrifice of all possible weight in the interest of the highest performance, the instruction calling for a strength factor of six, to be increased, if possible, to twelve, has been varied in practice, so as to admit in some cases a substantially diminished factor. This lower factor demands that still greater precision in calculation of strength shall be used. Instruction and information as to these calculations has been freely given to aeroplane constructors and designers.

"Recent Laboratory tests have shown that raf-wires of the type developed at the Factory show little or no aerodynamic disadvantage as compared with wires of stream-line section, and in view of their mechanical advantages and easier production they have accordingly been standardised and their use has been put at the disposal of aeroplane constructors. Universally jointed end fittings have been employed as an additional precaution against the effect of vibration. The

reliability of the wires, when properly heat treated, has been assured by vibration tests at the Laboratory.

"Great attention has been paid to the thorough testing of all metals used in aircraft construction, and a specimen from every bar is individually tested. Owing to the high demand for mild steel of less good quality for shells, the difficulty found in obtaining the better class of material required for much of the work on aeroplanes has been overcome by micrographic and temperature studies of the metal at the Factory, and the treating of the steel as delivered till the better quality is secured. Advice and assistance has been given to constructors with regard to their heat treatment plant.

"*Design and construction of aeroplanes.*—New machines and new wing sections have been designed to take advantage of new knowledge, and appreciable improvement for a given engine power and weight has been obtained. Development proceeds by the making of a few trial machines, and four main types have been standardised for contract purposes. In new types guidance has been received from the experience of the Royal Flying Corps in the field, and in all cases it has been found possible to secure stability under ordinary flight conditions. Certain aeroplane constructors have taken advantage of a new device for saving weight in design, of a fair-shaped design of tail, a steerable rear skid and other details. Special attention has been given to the provision of suitable landing gear, and in large machines an air and oil recoil mechanism has been successfully introduced. The improvement of air-cooled and of water-cooled engine design and construction has been the subject of continued study, resulting in new designs and their development, with the help of the firms concerned. Two new devices are being tested for improving the performance at heights.

"*Instruments.*—Owing to the greatly increased demand for aeroplane instruments, the work in this connection has been very much augmented, the labour of correction and adjustment of deliveries being considerable, and much instruction and assistance has been given to instrument firms. A new air speed indicator of the metal diaphragm type has been designed and tested. Improvement has been made in the system of electric lighting of instruments. The National Physical Laboratory method of test of instrument dials painted with luminous paint has been of great assistance, and the test is now specified as standard by the Royal Aircraft Factory. The temperature and lag errors in aneroids are being investigated and their remedy considered. An improved engine speed indicator is designed and is under construction. The investigation relative to the aeroplane compass, already referred to, has led to the production of the R.A.F. Mark II Compass, which is now being made by contract in large numbers for the Royal Flying Corps.

"Two wireless telegraphy sets of very light weight have been designed and tested, and the investigations relative to finding the true vertical on aeroplanes in flight have progressed satisfactorily, as well as the evolution of optical systems for convenient observation of bomb dropping from aeroplanes.

"*Whirling arm.*—The whirling arm at the Royal Aircraft Factory has been used for tests of full scale air-screws, and modifications made to give speeds up to 70 m.p.h. The results have been valuable in studying the relation between model and full scale observations taken on aeroplanes in flight. Comparative experiments are also in progress at the National Physical Laboratory.

"*Fabrics and dopes.*—Experiments with various types of fabric have been in progress in connection with visibility and with a view to lowering the weight of the fabric covering of wings, and decreasing the amount of the tightening and protecting film necessary. It has also been found that a method of abandoning the use of poisonous ingredients can be relied upon. Protracted experiment has led to the conclusion that the greater part of the deterioration of the film on aeroplane wings is due to the actinic portion of the sun's rays, and it has been found that effective protection can be obtained by the application of a finishing varnish containing pigment, and that advantage is gained by the avoidance of drying oils in contact with fabric. The use of the pigment is also serviceable in certain cases in rendering aeroplanes, when on the ground, less visible from above.

"*Other matters.*—A large number of special tests have been made on oils and petrols, the design of magnetos, in which assistance has been given by experiments at the National Physical Laboratory, the design of spark plugs, the design of shell for special purposes, gun mounts, fire grapnel, &c., on thin tubular struts, on sound detection, on the stability of bombs, on the gas distribution in engines, the use of air-

screws of variable pitch, and many other problems. A special speed measuring course has been laid out for determining aeroplane speeds at heights.

" NAVAL WORK.

"The assistance of the Committee has been given to the Air Department of the Admiralty in connection with a number of important problems, in which laboratory experiment was desired in conjunction with investigatory work proceeding on the full scale. Among the questions dealt with may be mentioned the design of airships, both rigid and non-rigid, the mooring of airships over the sea, points in connection with the design of seaplane-carrying ships, the design of wind screens near airship sheds, and the equilibrium and stability of kite balloons. The National Physical Laboratory has also been working in co-operation with the Air Department in relation to airship fabrics, dopes for aeroplane fabrics, the production of light alloys, and other matters.

"As mentioned earlier, a request was made by the Air Department of the Admiralty for an increase in the facilities for tests of seaplane floats and flying boat hulls. The necessary provision has been made for this, and the full scale work on machines of new types is being carried on in conjunction with model tests in the William Froude Tank at the National Physical Laboratory. The utility of the model work has been fully demonstrated in the full scale tests.

"New types of aeroplanes and seaplanes have also been developed by the Air Department, with the aid of wind channel tests at the National Physical Laboratory, and the co-operation of the Committee has been obtained with reference to a number of special matters, especially in regard to auxiliary apparatus for use on aircraft.

" METEOROLOGICAL WORK.

"The experimental work of the year has been mainly concerned with arrangements for the automatic recording of lightning flashes and ascertaining by wireless telegraphy the position of distant thunderstorms, with the object of giving warning of their approach to those interested. The Admiralty have arranged for the co-operation of the Naval Wireless Department, and the assistance of observers of weather in various parts of the country has been secured.

"The work at South Farnborough is in charge of Temporary Capt. C. J. P. Cave, of the Meteorological Section R.E., who is now meteorologist in charge of the Office at South Farnborough.

"Arrangements are in progress for observations on the relation of various conditions of weather to visibility of near and distant objects.

"In connection with the regular work of the Office at South Farnborough, information of various kinds as to the state of the atmosphere has been supplied to the Royal Aircraft Factory, information as to the structure of the atmosphere, as obtained by pilot balloons, to the Royal Flying Corps, the Aeronautical Inspection Department, and other centres.

"The Office is in regular daily communication with the central Meteorological Office at South Kensington, for the transmission of the observations made locally and for the receipt and distribution of information collected and arranged at the Central Office. It has also been used for training meteorologists for duty with the Meteorological Section R.E.

"There have been many changes in the professional staff, which now consists of Capt. Cave and Mr. R. A. Watson Watt, B.Sc., of University College, Dundee.

"Arrangements are in progress through Major G. I. Taylor, R.E., who has been appointed Professor of Meteorology, to improve the exchange of information between the air pilots and the Meteorological Service, and to enable the collected records of weather and the experience of airmen, which is at present unrecorded, to be used for the advantage of the Air Services.

"Signed on behalf of the Committee,

"June, 1916.

"RAYLEIGH, President."

It may be recalled that the members of the Committee are:—The Rt. Hon. Lord Rayleigh, O.M., F.R.S. (*President*); Dr. R. T. Glazebrook, C.B., F.R.S. (*Chairman*); Mr. Horace Darwin, F.R.S.; Mr. E. H. Tennyson d'Eyncourt, C.B.; Sir G. Greenhill, F.R.S.; Lieut.-Gen. Sir D. Henderson, K.C.B., D.S.O.; Mr. F. W. Lancaster, M.Inst.C.E.; Mr. H. R. A. Mallock, F.R.S.; Lieut.-Col. Mervyn O'Gorman, C.B.; Professor J. E. Petavel, F.R.S.; Sir Napier Shaw, F.R.S.; Commodore Murray F. Sueter, C.B., R.N. *Secretary*, Mr. F. J. Selby.

AIRISMS FROM THE FOUR WINDS.

How to stop Zepp. raids. Use this formula:—

$(A \vee \rho)^N$.

When N = some sensibly large number.

THEN, when we've got them, send them over to the Zepp. bases and properly strafe the pirates in their lair.

THE Admiralty are to be congratulated on their efforts at abbreviation. Probationary flight officer is certainly a little less of a mouthful than Probationary flight sub-lieutenant (temporary). Perhaps they will try again.

BUT what about the Parliamentary Air Committee's terminology: "Sea-birds" for naval seaplanes, "Land-birds" for Army aeroplanes.

BOTH appellations, in our opinion, are thoroughly worthy of "the bird"; and we fancy they'll have it!

QUAINT idea for parliamentarians to set themselves this sort of task. There's plenty of energy in other directions wanted to keep the country at the top in the air, before they try and take the bread—at *od.* a loaf, too—out of the mouth of the poor etymological student. Why not ask "P.B." to join up and give them something in the way of rhetorical suggestions?

IF the brainy members of the Air Committee have been misreported, we hasten to ask pardon. Perhaps the real meaning is to be found in the following suggestion appearing in the *Spectator*:—

"They propose that the present clumsy and ugly system of designating aircraft by numbers and letters should be replaced by the names of birds. The machines would be grouped in classes, and each class would have a distinctive name. The names of sea-birds would be given to seaplanes and the names of land-birds to Army aeroplanes. Just as ships of war are grouped in the 'county' class, the 'river' class, and so on, the aeroplanes would be thrushes, blackbirds, tits, swallows or sparrows, and the seaplanes redshanks, cormorants, herring-gulls or guillemots."

WHICH idea has something quite pretty in it, possibly, for privately owned aircraft. But for service machines! Well, in this case we will wait and see how it strikes others.

DID all the Parliamentary visitors to "one of the most important R.F.C. parks" last week enjoy their trips in the air on Government machines?

DID one discover that a monocle is not a convenient medium for admiring the landscape when looping?

HAS he yet been convinced by other "hon. members" who were present that he did loop the loop?

PETROL as a fuel for aero engines is, perforce just now, universally accepted.

DOES it necessarily follow that petrol is likely to be always, or even for many years, the only fuel worthy of consideration?

WHAT about producer gas?

APPARATUS much too heavy? Well, we are not so sure. In fact, somebody we know claims that the same power can be obtained, using the same old petrol engine, practically without alteration, for the same weight and about one-fifth more bulk.

OR, what about that elusive and evil-smelling stuff, ammonia?

WILL leak past any piston ring ever made, it is true, but why necessarily use piston rings?

UNLIKE producer gas, ammonia is hardly likely to be used in an ordinary engine, but there may be—we do not say there will be—others. As for comparative power output, well comparisons are odious. Literally.

WHAT does "A Naval Correspondent" of one or two of the dailies mean exactly in his little story about Britain's new airships?

AN airship which "certainly seems marvellously rigid" is not necessarily a rigid airship.

AND anyway, what are the Editors about, and what about the Defence of the Realm Act? It looks like a bout with the authorities for someone.

BESIDES, where is the giving out of the surprise packets to come in?

WITH regard to the various civilian flying schools, the negotiations and arrangements entered into some time ago are now panning out to finality, and pupils will be forthcoming very shortly. As soon, in fact, as the civilian pupils now in training have qualified for their "tickets."

ON a recent visit to Hendon we noticed that most of the *habitués* seemed to walk about with a stiff neck. On inquiry it transpired that this was contracted through trying to follow with the eyes a new 'plane recently emerged from one of the sheds. Well, she certainly is fast, and no mistake.

FOR all whom it may relieve:—

Oil of Assiduity 4 oz.

Liq. Erudition, Fort. 1 oz.

Spirit of Enterprise 2 ozs.

Ess. Application, Quan. Suff.

To be well rubbed in before the fire (gas). A splendid recipe for "Hendon crick" in the neck, caused through trying to follow the new speed machine doing circuits.

IT was good to find Jack Cates aerodroming again last week-end, also to get a peep at those twinkling eyes behind his glasses. He no longer asks "How's your father," but gazes sadly at the unwound SHELL clocks. To ask him the time brings the reply that it is "just past L."

THOSE at Hendon who think Ruffy is building an airship are mistaken. It is an aeroplane.

HOPE the collection for Osipenko will be a bumper, but could have wished it were to do something for him *post-hospital* days. To have to collect for necessities ought not to be necessary.

THE new London and Provincial Aeroplane Works in Colindale have still got the old name up, "London and Parisian Motor Garage." The firm's offices are still over the London and Provincial Bank. Quite a warren of s(i)miles.

NOTE.—The man who wrote the above is now chained down in the attic.

WISH to correct heading, "Development of Artificial Flight," in the *B.P. Magazine*. "FLIGHT" is developing, but it is far from being artificial. You watch.

THE cult of the little tractor scout is spreading.

CAPITALISTS who do not want to be much higher than the second floor in aviation finance should stop thinking about "getting in." They should "get," and before *all* the ground floor claims are staked off.

THE ZEPPEL, THE LAMB AND THE RABBIT. A story of retaliation.—Upon the occasion of the last Zeppelin raid on the East Coast the only damage done in a certain district was the killing of one lamb and one small rabbit. The farmer to whom belonged the field in which fell the bomb which killed the lamb and the rabbit, promptly organised an exhibition for the benefit of the British Red Cross, charged 6d. for admission to view the mutilated remains and the big shell hole, and thereby collected the handsome sum of £11.

WHO said we could not build aero engines? Anyway where does the Beardmore-Halford-Pulford combination come in?

"B.-H.-P." also stands for brake-horse-power, and plenty of it, too.

THERE are now 300 loops to the credit of the L. and P.—or should it be Loo P?—bus.

HATS off to the Malay States. Including the 14 fighting machines given by the Sultan of Johore, all classes in the Malay Peninsula—Europeans, Malays, Chinese and Indians—have subscribed for 45 aeroplanes for the British Army since the outbreak of war.

WHAT about the latest mess at the Central Flying School at Salisbury?

No, not the kind *you* mean, but the one that was opened the other day with an "At Home"—sports, concert and dancing.

JOURNALISM has, and still is, playing its part well in giving to the Services officers with valuable technical knowledge and training. Among those recently obtaining their "wings" in

the R.F.C. is Second Lieut. R. E. Dangerfield, son of Mr. Edmund Dangerfield, of the Temple Press. Our congratulations to both father and son.

IF the "tales" of the Grimsby fishermen—of the hide and seek behind artificially created clouds tactics of the Zeppelins over the North Sea—are not too highly coloured, these peripatetic prowlers may well be dubbed the "Squids" of the air for the future.

HAVING exhausted the toxic effects of the Hymn of Hate, the latest effort of the German Government is to try to persuade the German people that they are taking their revenge for what they call the Baralong case by sending Zeppelins to England. "Every time a Zeppelin appears the English are to remember the 'Baralong.'" So runs the legend.



UNDER the above heading will be published weekly particulars of a personal character relating to those who have fallen or have been wounded in the country's service, announcements of marriages and other items concerning members of the Flying Services and others well known in the world of aviation. We shall be pleased to receive for publication properly authenticated particulars suitable for this column.

Casualties.

Second Lieutenant HENRY MERRIK BURREL LAW, R.F.C., who was killed on August 8th, aged 24, was the eldest son of Mr. and Mrs. H. K. Law. He was educated at Exeter School, and was a member of the O.T.C. Being employed on Government work, he could not obtain his commission until December, 1915. He went to the Front in July. His brother, Second Lieutenant C. L. G. Law, Suffolk Regt., was killed in Flanders last September.

The funeral of Second Lieutenant CARRIER, East Yorkshire Regt. and R.F.C., who was accidentally killed on August 13th, took place at Leicester amid manifestations of great public sympathy. He belonged to a well-known Leicester family. A firing party and a military band attended, and officers and men of the R.F.C. walked behind the gun-carriage on which the coffin was placed. At the conclusion of the service volleys were fired over the grave.

Lieutenant EDWIN JOHN LESLIE LONNEN, R.F.C., who was killed last week owing to an accident whilst flying at Dartford, was the only son of the popular comedian, the late Mr. E. J. Lonnen, whose name was so long associated with the Hollingshead Gaiety successes, he being contemporaneous with Miss Nellie Farren, Miss Kate Vaughan, Fred Leslie, &c. Lieutenant Lonnen was 27 years old. Resigning his position in the Bank of Chili, Mauritius, he returned to England and joined the H.A.C. Later he joined the R.F.C., and was appointed Lieutenant two months ago. He was buried with military honours on Saturday in his father's grave at Norwood Cemetery.

Wounded.

Captain STUART GRANT-DALTON, D.S.O., Yorkshire Regt., attached to R.F.C., wounded, belongs to a Somersetshire family, and was born in 1886. He became in 1906 a Second Lieutenant in the regiment mentioned, and attained to his present rank in October, 1914. For his services in the field he was recently awarded the D.S.O.

Captain EDWARD HENRY PETRE, Suffolk Regt., attached to the R.F.C., wounded, is the son of Mr. Francis W. Petre, and a great-grandson of the eleventh Lord Petre, who died in 1850. Born in 1881, he got a commission in the Suffolk Regt. as a Second Lieutenant in May of last year, and was promoted to be Captain in the following October. His father, who resides in Dunedin, New Zealand, is the heir-presumptive to the present Lord Petre, who is only two years old and succeeded to the peerage last September, his father, who was a Captain in the Coldstream Guards, having died from wounds received in action in France.

Married and to be Married.

The marriage of Captain H. COLMORE, 7th Hussars, R.F.C., and Miss NINA GOSTLING-MURRAY, took place, quietly owing

to the war, at the Memorial Church, Swythamley Park, on August 18th.

An engagement is announced between RUBY, only daughter of DARTFORD HOLMES, of Huddersfield, and Flight-Lieutenant F. M. L. BARR, R.N., only son of Engineer-Commander E. Barr, R.N., and Mrs. Barr, of Mossgeil, Rainham, Kent.

Items.

MR. WILFRID C. ASHLEY, who has been elected chairman of the Parliamentary Air Committee, has represented Blackpool in the Commons in the Conservative cause since 1906. He is a great-nephew of the famous philanthropist, Lord Shaftesbury, and married the only child of Sir Ernest Cassel in 1901. He has served in the Ayrshire Militia, the Grenadier Guards and the Hants Militia, retiring with the rank of Major in 1903.

MR. ALAN H. BURGOWNE, who has consented to act as secretary to the Parliamentary Air Committee, has long been interested in aeronautics, and consistent readers of "FLIGHT" from No. 1 will doubtless recollect an illustrated description in our issue of November 27th, 1909, of two of his very practical and beautifully made models. He is a Unionist Imperialist and Tariff Reformer, and sat in the House in the interests of North Kensington since 1910. He founded the *Navy League Annual*, which he edited for five years. He is greatly interested in submarine work. Mr. Burgoyne has travelled extensively in all parts of the world, and once, when in Port Arthur, was mistaken for a spy and saw the inside of a Russian prison.

Information is now to hand of how Second Lieut. GEOFFREY VICTOR RANDALL, R.F.C., whose death was announced in "FLIGHT" on August 11th, met his end. A fortnight before he was killed he and his observer were attacked by four hostile machines. Lieut. Randall brought one enemy machine down, and kept the other three at a distance until he reached the British lines. Later he was attacked by eight hostile machines, shot through the head, and killed instantly. His observer climbed into the pilot's seat, and managed to get hold of the controls, when he was rendered unconscious by a shot. The aeroplane circled and grounded 400 yards from our front trenches. The observer was rescued by a padre and a sergeant under heavy fire. Lieut. Randall's squadron-commander writes:—"I am very cut up, and so is the whole squadron at losing him. . . . Twice lately I have brought his name before the proper authorities for brave and useful work, and only a few days ago I was ordered to convey to him the personal congratulations of the G.O.C., R.F.C., in the field." And again in another letter:—"He was overwhelmed with eight hostile machines, but all accounts agree that he went straight into the middle of them, and he would never have cared if it had been 18 instead of eight."

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

War Office, August 16th.

"Mesopotamia.—On Sunday there was an aerial combat which resulted in a Fokker being brought to the ground behind the Turkish lines. The Turks twice attempted to save the machine, but were driven off by our artillery fire, which also destroyed the Fokker.

"During Monday night the enemy's hangars near the Shumran bend were bombed by our aeroplanes, all of which returned safely."

General Headquarters (France), August 17th, 10 p.m.

"A German aeroplane was brought down behind our lines near Pozières."

General Headquarters, August 18th, 10 p.m.

"Yesterday a German flying machine was brought down in flames in our trenches as the result of a combat, and a second machine by our anti-aircraft guns.

"Enemy's billets were successfully bombed at various places by our aircraft."

General Headquarters, August 20th, 10.47 p.m.

"In spite of low clouds, our aircraft did very useful work yesterday in communicating with our advanced infantry. One of our aeroplanes, coming down to a low height, opened machine-gun fire very effectively on the enemy's infantry in their front-line trenches, and also on hostile reinforcements coming up communication trenches."

War Office, August 20th.

"Salonica.—Enemy aircraft have bombarded Jenikoi Gavalanci and Gugunci with small success."

General Headquarters, August 21st, 9.42 p.m.

"A hostile balloon was forced to descend by our gunfire.

"Our aeroplanes continue to bomb the enemy's billets with success, in addition to their work with our artillery. Yesterday one of our machines did not return.

"To-day hostile aeroplanes showed a little more enterprise than usual, and some ventured over our lines."

French.

Paris, August 16th. Afternoon.

"In the night of the 15th and 16th enemy aircraft dropped some bombs on Belfort. There were no casualties."

Paris, August 16th. Evening.

"Our aeroplanes have bombarded enemy establishments at Nicolic and Volovech (near Lake Doiran), and the military centres at Strumitza Station. Enemy aeroplanes bombarded an ambulance at Vertekop. One German machine came to earth in the Serbian lines, the two aviators being made prisoners."

Paris, August 21st. Evening.

"Our chasing aeroplanes to-day were engaged in numerous fights, in the course of which two enemy machines were brought down in the enemy lines, one in the region of Deniecourt and the other near Berny."

Russian.

Petrograd, August 15th. Afternoon.

"At about 7 o'clock in the evening of August 14th a German Albatros appeared over the town of Nesvij. Staff Captain Kruten, who brought down an enemy aeroplane at Nesvij on August 12th, ascended with his machine (which is mounted with a machine gun) and engaged the hostile aeroplane. This he drove to earth after an engagement lasting several minutes. The German machine fell in the vicinity of the town of Nesvij. The wounded pilot and the observer were taken prisoners.

"In the morning of August 14th the aviators Lieutenants Deterichs and Prokofiev undertook, with two hydroplanes, a clever raid on the enemy's aerodrome near Lake Agern, in Courland. Our aviators, notwithstanding the bombardment by anti-aircraft batteries and a counter-attack by seven German machines, not only dropped bombs successfully on the enemy's sheds, but boldly entered into an unequal fight which lasted more than an hour. Many bullets struck our machine, but happily not in vital parts. As a result of the fight one of the enemy machines was struck, turned over in the air, and, surrounded with smoke, fell to the ground. Two others, having received injuries, alighted on the sea. Our hydroplanes returned safely to their base."

Petrograd, August 17th. Afternoon.

"A Zeppelin flew over the region of Kemmern, west of Riga, and dropped a number of bombs."

Petrograd, August 18th. Afternoon.

"In the Baltic Sea, on the night of August 16th, a squadron of our seaplanes, under the command of Naval Lieut Lichine, made a successful flight over the enemy's aviation station near Lake Aughern. Bombs were dropped, and apparently caused great destruction. One of the enemy's hangars was wrecked, and fires broke out in several parts of the aviation station. Our airmen were subjected to a heavy fire from the enemy's anti-aircraft guns. The enemy sent up rockets and bombarded the machines with shrapnel, which, however, did not prevent our airmen from accomplishing their task and subsequently returning to their base without loss."

Petrograd, August 19th.

"In the region of the small town of Sokul an enemy aeroplane dropped over 70 bombs."

Petrograd, August 21st. Afternoon.

"In the region of Lubieszow, on the Stokhod, our artillery set fire to a German observation balloon."

Italian.

Rome, August 15th.

"Enemy aircraft dropped bombs on Monfalcone, Ronci, San Canziano and Pieris. There were no casualties or damage.

"Our seaplane squadrons carried out this morning with success a bombardment of the Government workshops and the aircraft shed at Muggia, Trieste, creating in that industrial district many great fires. French chasing machines assisted in an aerial engagement, repulsing enemy seaplanes. All returned safely except one seaplane."

Rome, August 16th.

"A squadron of 14 Caproni aeroplanes, escorted by (French) Nieuport chasers, yesterday bombarded the railway and military establishments near the important stations of Prvacina and Dornberg. Ninety high-explosive shells (about 2½ tons) were dropped, and good results were observed.

"In spite of the heavy fire of numerous anti-aircraft batteries, our machines returned safely."

Rome, August 17th.

"A squadron of our Voisin aeroplanes bombarded the railway station of Reinenberg, on the line Gorizia-Trieste. Good results were observed, and the machines returned safely.

"Last night hostile seaplanes dropped bombs on Venice and on the Grado Lagoon. Some slight damage, but no casualties are reported."

Serbian.

Salonica, August 19th.

"An enemy air squadron bombed the British ambulances at Vertekop. Six persons were killed. Nineteen Allied aeroplanes dropped 80 bombs on enemy hangars at Monastir. Excellent results were observed."

German.

Berlin, August 17th.

"On the night of the 15th inst. our seaplanes again attacked with explosive and incendiary bombs the aerodrome of Papenholm, on the Island of Oesel (at the entrance to the Gulf of Riga) and enemy aeroplanes on the shore of the Island of Runo in the Gulf of Riga. Despite heavy anti-aircraft fire and a subsequent air fight, our seaplanes safely returned. The same night a raid by four enemy aeroplanes on Lake Angern caused only slight material damage."

Berlin, August 18th.

"German aeroplanes, together with a U boat, attacked Russian destroyers to the north-east of Kara Burnu, with success."

Berlin, August 21st.

"Off Ostend an English seaplane was destroyed by our fire and a French seaplane was shot down. In an air fight an English biplane was brought down south-east of Arras."

Austrian.

Vienna, August 16th.

"On Monday night a squadron of seaplanes attacked Avlona. Direct hits on the coast battery, the barracks, camp, a storehouse and on a ship were obtained. Several fires broke out. All our seaplanes returned undamaged, despite a violent anti-aircraft fire."

Vienna, August 17th.

"In reply to the hostile air attack on Trieste, one of our air squadrons last night attacked Venice, where the railway station depôts, arsenal and military objects were abundantly pelted with heavy and light incendiary bombs. Many hits

were obtained, and a great fire broke out in the railway depôts. A second squadron successfully attacked the harbour of Grado, a battery on the Lower Isonzo, and military objects at Monfalcone. Despite a very heavy anti-aircraft fire all our aeroplanes returned undamaged."

Turkish.

Constantinople, August 19th.

"On the morning of August 2nd, under the protection of French destroyers, four aeroplanes from a British warship, which appeared off Haifa and attacked Aful (Carmel) and

Magareth, dropping bombs and killing one child and wounding four persons, our artillery forced the aeroplanes to withdraw to the coast."

Bulgarian.

Sofia, August 19th.

"A squadron of German aeroplanes early this morning attacked railway works near the village of Lanetschewo and the enemy camps near the villages of Karsovo, Gavaliantzi, Dragomirtzi and Kalabak, with good effect. All the aeroplanes returned to their base."

R.F.C.

THE following fourth résumé of incidents extracted from recent reports of the Royal Flying Corps in France was issued by the Air Board on August 16th:—

"July 20th.—At about 6.15 p.m. four of our aeroplanes encountered an equal number of Fokkers, accompanied by two biplanes. A fight which lasted for nearly three-quarters of an hour ensued. Eventually one of the Fokkers was driven down and destroyed; a second went away hard hit, and the whole formation was dispersed. Our machines returned undamaged, though one pilot was wounded.

"Between 8 and 9 p.m. an offensive patrol of four of our machines encountered a hostile formation of 11 machines, which included L.V.G.'s, Rolands and Fokkers. Our leading machine first dived at an L.V.G., which made off to the east, and then attacked and drove down a Fokker. It was then attacked by a Roland, but, out-maneuvring it, drove it down. Our second machine had meanwhile closed with another Roland, which was driven down out of control. In this combat two Fokkers, which were about to attack, nearly collided. Our third pilot, who was at a lower altitude, having disposed of a Roland, which fell in a spinning nose-dive, was attacked by a Fokker, and, in consequence of his engine having been hit, he was unable to out-maneuvre it. He therefore descended in a steep spiral. Our fourth pilot observing this dived to the rescue and engaged the Fokker at a height of 1,000 ft. above the trenches. The Fokker fell to the ground and burst into flames.

"Eventually all the hostile machines were dispersed. The destruction of the three hostile machines is confirmed by independent witnesses.

"July 21st.—Much successful co-operation with artillery was carried out; 92 targets were engaged with aeroplane observation and 25 with kite balloon. Several direct hits on gun emplacements were obtained, the ammunition in one continuing to explode for over half an hour.

"One of our machines, engaged on photographic duty, was attacked by a Roland, which came level and then dived and attacked under the tail of our aeroplane. Our aeroplane side-slipped till level with the Roland, and then fired three drums into it at 40 yards. The Roland fell to the earth near Leuze Wood.

"One of our aeroplanes, whilst on artillery patrol at 4,000 ft., saw eight hostile aircraft at a height of 9,000 ft. It climbed to this height and was joined by five of our fighting machines. At this juncture the enemy were joined by five L.V.G.'s and two Fokkers. Our machines all attacked the somewhat scattered enemy formation. A section of three of our machines dived on to one party, of which one Fokker plunged to earth from a height of 7,000 ft., and two other machines were forced to land. Another machine was seen to fall out of control into a village, and yet another fell headlong to earth in a field. The fighting lasted over half-an-hour, when the remaining enemy machines flew off in twos and threes.

"The total of hostile machines brought down on this day was six, and at least three more were driven down damaged.

"July 27th.—At 12.30 p.m. four of our bombing machines, armed with heavy bombs, set out to attack an important railway centre on the enemy's lines of communication, where large quantities of ammunition had recently been reported. East of the line clouds were below 5,000 ft., which considerably favoured the expedition. The bombing machines arrived over their objective between 2 and 2.30 p.m., and all

four machines descended to heights of from 2,000 ft. to 4,000 ft. to drop their bombs. The station, which was crowded with rolling-stock, and the sheds, containing ammunition, were attacked. Both sheds and rolling-stock were hit, and fires were seen to be started at four different points by our pilots, who remained circling round.

"The expedition was practically unmolested by anti-aircraft guns or hostile aeroplanes, and all our machines returned safely and landed on their home aerodrome within four minutes of one another."

R.N.A.S.

The following incidents, extracted from recent reports of the Royal Naval Air Service, were issued by the Air Board on August 19th:—

"Our machines have maintained a steady offensive in Southern Bulgaria, which has had a most demoralising effect on the enemy. Places where the heaviest anti-aircraft fire was encountered have been singled out for special attention, with the result that our machines now fly over these places with little or no opposition. Much damage has been done to transport vehicles and their huts.

"Our machines have maintained a regular patrol of the Dardanelles, attacking with bombs and machine gun fire all enemy movements.

"On July 2nd two of our seaplanes proceeded on a reconnaissance over Haifa and dropped bombs on the bridge and wharf. One of the machines came to grief, and was observed half a mile from Acre drifting towards the shore in a sinking condition. The other machine thereupon landed a few yards from it and took aboard the pilot. As it was impossible to save the machine it was fired at and sunk. The remaining machine then returned, carrying three persons, one sitting on the petrol tank.

"On July 21st one of our seaplanes, when at 11,000 ft., encountered a hostile biplane on the Flanders front. The British pilot dived on the hostile machine, which, in the meantime, was manœuvring for position under his tail, opening fire at the same time. The machines met nose on, both firing, and passed each other at 20 ft. range, our machine firing one tray. The hostile machine then turned and made for the coast. Our pilot followed, but owing to lack of petrol was forced to descend.

"On July 28th one of our machines sighted a hostile aeroplane returning towards Nieuport. Diving from 14,000 ft. to 10,000 ft., and manœuvring to get the advantage, our pilot opened fire at close range. Unfortunately, whilst the attack was being carried out, the machine experienced a strong concussion, and, getting out of control, dived steeply and dropped, spinning some 2,000 ft. The pilot with great difficulty eventually regained control of his machine and made a safe landing. The machine was found to have the whole upper surface of the left-hand upper plane and two-thirds of the right-hand upper plane stripped of fabric. This damage was caused by the explosion of a shell close to the machine."

A Raid by the R.N.A.S.

THE Admiralty issued the following announcement on August 19th:—

"At noon yesterday, the 18th inst., a successful attack was carried out by naval aeroplanes on enemy ammunition dumps at Lichtervede.

"Forty-eight bombs were dropped from a height of about 3,000 ft., and large fires were afterwards observed.

"All machines returned safely."

From Other Sources.

The *Daily News* Special Correspondent, writing from the British Headquarters on August 9th, says:—

"With the other War Correspondents, I have been given the opportunity to read the official reports of the operations

of our flying men in the last part of the month of July. It is an amazing document. As I have said once before, there is material here awaiting Mr. Kipling as wonderful, as outrageously improbable, as anything which he found in the

records of the submarines. And the miraculousness of it is heightened by the solemn official language in which the feats are described.

"It is almost sadly that the report states that on July 26th the enemy machines 'were quite inactive until late in the evening,' much as one might report that the fish were not biting well. Then, however, we cheer up, for 'a reconnaissance to Cambrai saw some 15 and had considerable fighting.' So the day did not pass entirely without sport. But it is the character of the fighting that moves astonishment.

"On July 27th, we are told, 'Captain B engaged several hostile machines, driving them off,' and the 'several' is delightful. On the same day 'Lieutenant C dived at five hostile machines which were attacking a B.E. between Le Sars and Martinpuich. All the hostile machines were driven off.' Two days later, 'Lieutenants D, U and S saw five Rolands on the attack and broke them up, scattering them in all directions.' Then 'Captain B' turns up again, being attacked by an enemy machine which he had mistaken for one of ours. He inconsiderately gets his side gun jammed, so he fires a drum from his top gun and bags the enemy. That he did bag him is only known from the report of another of our men, 'Lieutenant J,' who was watching and saw the enemy go down, Captain B himself being busy 'watching another machine.' It is often so, when the birds come too fast. 'Captain B' could hardly be expected to keep count of everything.

"And so the bewildering record goes, with tales—two lines long on the average—of the loveliest fighting against odds and of deeds up there above the clouds that shame us earthworms. We read how now and again the aeroplanes come down to 700 ft. and thereabouts and drop their bombs on horse transport moving along the roads or on columns of infantry. At such a height one almost expects to read that the enemy drove them off with stones and clods. We hear of them going to this town and that and bombing moving trains so that they blow up, and ammunition stores which continue exploding for an hour afterwards, the shocks being felt by our

machines at a height of 9,000 ft., and villages used as billets which catch fire and burn until next day.

"Yet all this is not the main work which the airmen do. The bulk of the reports deal exclusively with the observation work for our artillery, and how good that is I have told several times. Here we have the record of the numbers of 'targets' that are 'registered' each day, and what happens to those unhappy targets when the guns get on to them.

"It may be remembered that one day I reported that the enemy's machines were showing signs of enterprise. It seems that on that day 'some 25 machines in all appear to have crossed short distances over our lines.' Among them they dropped one bomb in a wood. Then the record goes on:

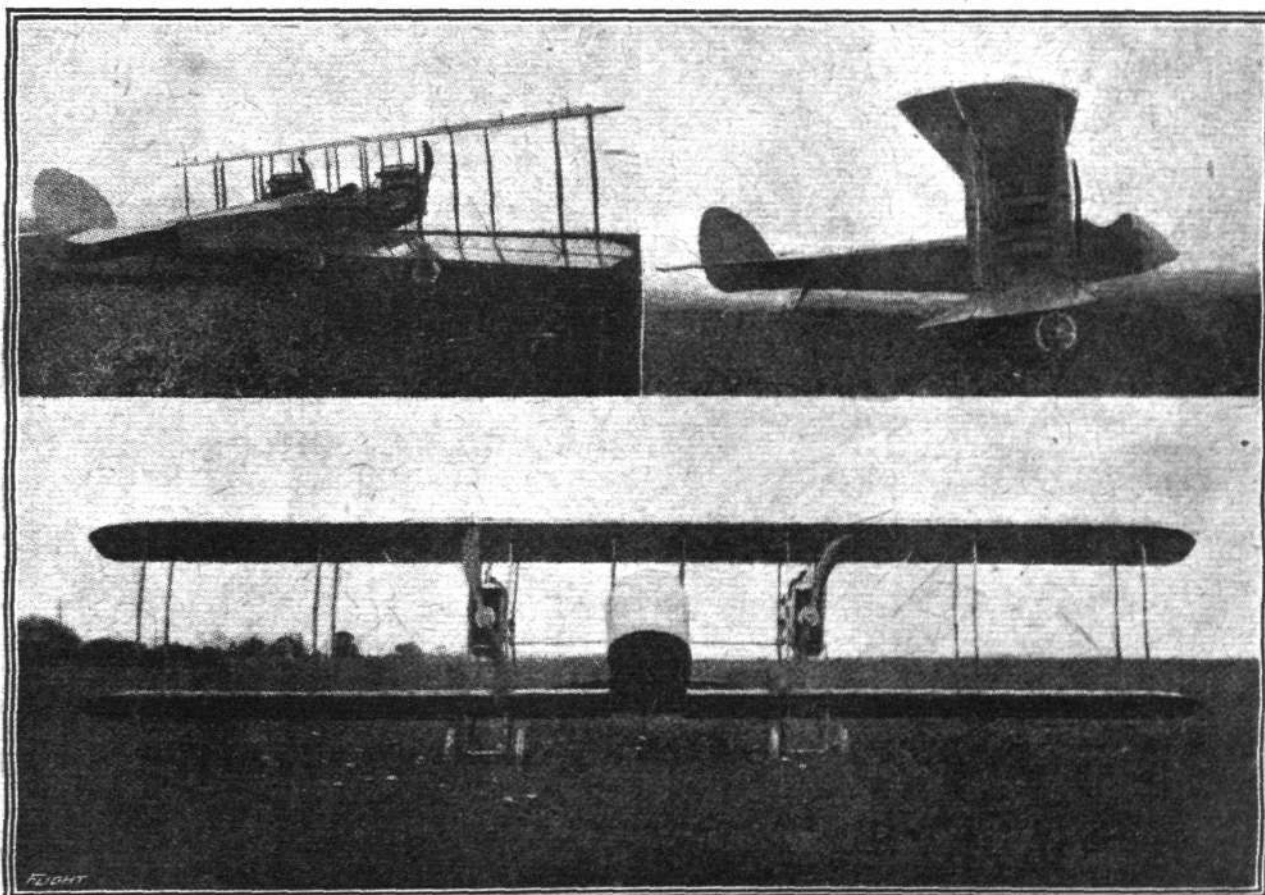
"No decisive results of the fighting were seen, as the fights followed one another so quickly (too many birds again!). The fighting was all in our favour, however, and the enemy formations were in every case dispersed and driven off. Two of his machines are believed to have been destroyed, but there is no confirmation. Several were driven down."

"But the gist of it all is in another sentence:—

"The work of our Corps machines was not interfered with. The Corps machines just went on with their work, registering targets for the edification of the guns, and taking the photographs of the enemy's ground that show up every trench which he makes or little molehill which he throws up till it stands out as distinctly as a burglar in the light of a policeman's lantern."

"It is an extraordinary document, which makes one most of all deplore the poverty of the human imagination which, before the coming of the aeroplane, could fashion nothing more thrilling as occurring in the air than futile flights on roc's backs and magic carpets. What one deplores less is the extremely uncomfortable time which the enemy is having, not only in the air, but in all the region under the air over a large space behind his lines."

A Central News message from Amsterdam on August 10th says:—



THE LATEST AMERICAN "TWIN" BATTLEPLANE.—Built by the Atlantic Aircraft Co., it has a span of 48 ft., and a supporting area of 550 sq. ft. The chord and gap are 6 ft. and 7 ft. respectively, and the length is 28 ft. 6½ ins. Two 90 h.p. Aeromarine engines are installed, and the speed range is 50-85 m.p.h. (Photo. by courtesy of "Aerial Age.")

"The Allied air squadron which flew over Brussels was composed of two monoplanes and five biplanes, and the goods station at Schaerbeek and the Zeppelin hangars at Evere were hit by several bombs. Happily, there was not a single Belgian victim to deplore."

The *Echo Belge* learns, in regard to the recent raid against Ghent, that the arsenal was bombarded with unusually large bombs. Eighty Germans were killed or wounded, and an extraordinary panic prevailed at the workshops. The effects of the bombardment were terrible. Portions of the roofs and walls of the buildings attacked flew high into the air, and when it was at length possible to approach the arsenal it was clear that it had been half destroyed.

An officer of the Royal Horse Artillery, writing to his mother in South Kensington, describes a thrilling air fight which took place a few days ago in France.

"The Huns came out, as they generally do, in a squadron of six machines," he says.

"We had six ready for them, and there was a tremendous amount of manoeuvring for the best positions. Suddenly one of their Fokkers swooped down on to one of our old defenceless patrol 'planes, which was flying very low, but the latter, performing the most extraordinary antics in the air, managed to escape, although the Hun chased our man down to within 300 ft. of the British guns before giving up.

"The Hun then climbed and had risen to a fair height, when one of our fighters dived at him and fired, but his shots missed and he dashed past the Hun, who gave chase. Our man zig-zagged for position, but the German, who was blazing away with his machine gun, seemed glued to the Briton's tail. All of a sudden another of our fighters appeared; he seemed to nose-dive from the very skies. He caught the Hun, was

behind him and then above him before the enemy could realise what was happening. The Hun tried hard to escape, and did a 'bank' towards his own lines, but our chap must have hit him, as he suddenly hovered and started volplaning slowly down. He would have escaped into his own lines, but as he crossed our trenches a furious rifle fire broke out and suddenly he dropped like a stone. Both our 'planes returned safely.

"So thrilling was the fight that the artillery of both sides stopped firing. All the gunners in the neighbourhood and all the supporting infantry got out of their shelters to watch. There was silence save for the noise of the three planes fighting, and when the Hun was brought down wild cheers broke out all along our line.

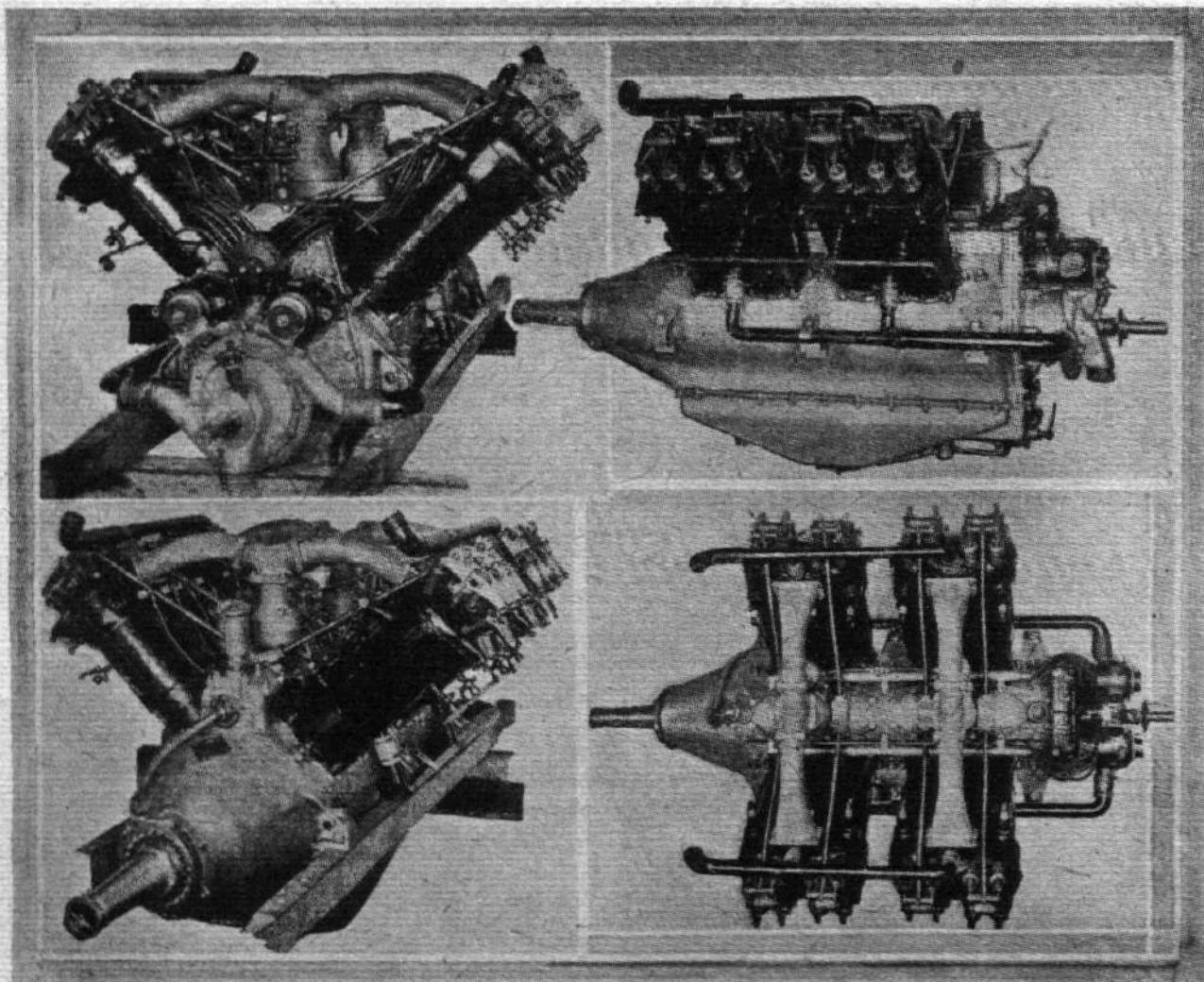
"When it was over both sides went back and bombarded each other more furiously than ever, just to make up for lost time."

A Reuter message from Cairo on August 13th says:—

"Our aircraft have done most excellent work, averaging 2,000 miles daily. Though our men flew low over the enemy's lines, no machines were lost. A most gallant feat was performed yesterday when one of our machines was hit and the pilot was observed to be seriously wounded. Nevertheless, he accomplished his task, and, returning safely to our lines, made a valuable report."

Mr. W. T. Massey, writing to the *Daily Telegraph* from Romani on August 12th, says, with regard to the retreat of the Turks:—

"They have destroyed a great quantity of stores, and were in the act of burying material when an aeroplane reported men digging beside camels, apparently intending to dump the



THE 190 H.P. MARTIN AERO ENGINE.—The main feature of this American engine is in the cylinders. These are built up almost entirely of steel, the only cast part consisting of the iron bushings for the valve guides. Each two cylinders are formed into a pair by the water jackets, which consist of a number of steel stampings welded together.

animals' loads in holes. Our artillery played havoc with the scheme."

Mr. A. Beaumont, writing to the *Daily Telegraph* from Milan on August 13th, says:—

"Indignation at the Austrian attack on Venice and the destruction of the historic church of Santa Maria Formosa by an Austrian aeroplane bomb is general in Italy. A despatch from Rome says that the news has been a shock even to the Vatican. It made a profound impression on the Pope, who immediately wired to Cardinal La Fontaine, Patriarch of Venice, asking him to telegraph particulars. It is believed the Pope will take the earliest opportunity of protesting against these crimes.

"Some months ago an Austrian aviator dropped printed warnings in the Venetian dialect over the city, which declared: 'If Gorizia is taken, then woe to Venice!' The Austrians have carried out the threat. To-day's *communiqué* reports a further aerial incursion over Venice, during which a bomb was dropped on the church of San Pietro di Castello, the dome of which took fire. Happily the flames were extinguished before they did any very serious damage."

The Frontier correspondent of the *Telegraaf* says that 10 Allied aeroplanes were seen above Zeebrugge on the evening of the 11th, and that the enemy fired at them vigorously.

Mr. Philip Gibbs, writing to the *Daily Telegraph* from the Somme front on August 11th, says:—

"What hope they had was in the guns behind them, and certainly, in spite of all the German guns we have knocked out by counter-battery work, and the fact that they have had to shift their ground from day to day owing to our ceaseless searchings for their emplacements with the aid of our aerial scouts, the bombardment that preceded the German assault was intense and formidable."

The *Daily Telegraph's* correspondent, writing on the evening of August 12th regarding the situation at Pozieres, says:—

"Our aviators have been very active, and our gunners have accomplished a good deal of destructive bombardment of enemy works and artillery."

Lord Northcliffe, in his article dated August 13th from the Isonzo front, says:—

"In nothing is the disorganisation of the Austrian defence

more clearly revealed than in the utter absence of aerial observation. During my whole visit to this front I have not seen an Austrian aeroplane or observation balloon. The Italian captive balloons float serenely in still air, directing the fire of their own batteries, but the Austrians appear to be firing blindly. The Italian heavy batteries are consequently able to do their deadly work undisturbed. Their shells search position after position, bursting with marvellous accuracy on selected points miles ahead, and crowning every ridge with dark clouds of smoke.

"On finding, through prisoners, that the news of the Franco-British successes on the Somme and the sweeping Russian advance had been kept from the Austrian rank and file, and that newspapers had long been withheld from the men in the Austrian trenches, General Cadorna, with his customary shrewd alertness, had millions of little news sheets dropped from aeroplanes among the enemy. The news sheets are printed in all the principal languages of the Habsburg Monarchy."

An Exchange message from Athens on August 13th states that it is announced from Salonica that German aeroplanes yesterday bombarded Vertikop for the fourth time, dropping bombs on the hospital quarters.

The *Telegraaf* learns from the frontier that in the recent air raids on Belgium bombs were dropped on the station at Mons, Hainaut.

This was the second time the station had been bombed in a fortnight, and both times it was crowded with military trains. Especially at the first raid, even before the airmen had appeared, much confusion prevailed at the station, the officials having received orders and counter-orders, so that they did not know which trains were destined for the Somme and which via Brussels and Germany, presumably for the Eastern front. Wagons were destroyed by the air raid, and railway traffic was hampered for a long time, with the result that the arrival of much ammunition for the front was delayed. The German authorities are very uneasy about the raid. They immediately ordered searches and examination of documents in the town, presuming that there were foreigners who gave information to the enemy. The repeated air raids on Ghent, Zeebrugge, Evere and Mons have led to a still more rigorous limitation of traffic.

The Parliamentary Air Committee.

At a meeting presided over by Mr. Wilfrid Ashley, of the Parliamentary Air Committee, held at the House of Commons on August 16th, the following resolutions were passed:—

1. That in the opinion of this Committee, without prejudice to the question of a central air service, an Air Lord should forthwith be added to the Board of Admiralty, representative of the Naval Air Service.

2. That, in the opinion of this Committee, the method of designating Government aircraft exclusively by letters or numbers should be abandoned, and that different types should in future be grouped by classes, and each class given a distinctive name, such as "land birds" for Army aeroplanes, and "sea birds" for seaplanes—a method which will simplify the present designations.

M.P.s in the Air.

A LARGE party of the Parliamentary Air Committee, on August 15th, paid a visit to one of the most important R.F.C. parks and saw a display of flying by Army officers, while a dozen or so availed themselves of an invitation to go aloft, and one or two indulged in a loop. They were much interested in a demonstration of a device which permits of a machine gun being fired through a four-bladed propeller without injuring the blades. Among those present were Mr. Wilfrid Ashley (Chairman), Lord Montagu of Beaulieu, Gen. Sir Ivor Herbert, Sir Alfred Mond, Sir H. F. Hibbert, Sir Edward Beauchamp, Sir Albert Spicer, Sir Edwin Cornwall, Messrs. Alan Burgoyne, J. M. Hogge, Shirley Benn, W. H. Dickinson, T. Davies, A. F. Bird, Rowland Hunt, R. Pearce, Robert Harcourt, Col. Pryce-Jones, L. Haslam, C. G. C. Hamilton, J. F. Rawlinson, K.C., Basil Peto and Hay-Morgan.

The Great War Film.

THE British and French official war film now showing at the Scala, the Philharmonic Hall and other halls in London,

should be seen by everybody. Unfortunately there is no much of an aviatic nature portrayed, for, with the exception of the ascent of one of the "sausage" observation balloons taken at close quarters, and another picture showing two of these highly efficient "eyes of the Army" in the distance, no aeronautical pictures are shown. One sees, however, our Army at work under real war conditions, and in every phase of the life on active service. Only one picture is a bit gruesome, that showing our brave fellows going "over the top," yet withal raising such enthusiasm in the onlooker as to make him wish to raise his hat to every wounded soldier he meets. Our Army is magnificent, and a taste of the film now being shown must bring home the realities of what war actually means to the least impressionable imagination.

Eyes of the German Fleet.

THAT the German fleet in their peep out of Kiel on Saturday morning were warned in time to bolt by Zeppelins of the strength of the British Fleet, is indicated by the reports of trawlers arriving at Ymuiden that they sighted two Zeppelins with a squadron of German warships steaming W.N.W.

Zeppelins and Trawlers.

THE mate of the Hull trawler "Endymion" has reported that, when fishing 18 miles off Flamborough Head on Saturday morning, a Zeppelin, E21, four times tried to bomb the trawler, but by cutting away the gear the trawler managed to escape. It was stated that the airship appeared to emit a cloud of smoke behind which it could hide.

Two Grimsby trawlers also reported an attack by three Zeppelins, which came down to 300 ft., but failed to hit the vessels with their bombs, although the bombs "exploded so close to the vessels that they were practically lifted out of the water." Sounds like pretty poor "shooting" anyway. But perhaps the proposed victims were not over expert judges of altitude.

Fatal Accidents.

THE death of Flight Sub-Lieut. H. Pearman, R.N.A.S., was inquired into at Aldershot on August 16th. It was shown that on August 13th he was sent to pilot a new machine, and when concluding a trial flight the engine stopped. The machine then side-slipped and struck a tree. Apparently the petrol tank was damaged, as the machine burst into flames as it struck the ground. Deceased was alive when taken from the machine, but he died from his injuries soon after admission to hospital. A verdict of "Accidental Death" was returned.

At the inquest on Lieut. E. J. L. Lonnen, R.F.C., who met with a fatal accident on August 14th, it was stated that the deceased pilot apparently tried to turn the machine when only 150 to 200 ft. from the ground. It nose-dived and crashed to the ground, Lieut. Lonnen being killed immediately. A verdict of "Death from Misadventure" was returned.

An inquest was held at Nottingham on August 15th relative to the death of Lieut. Carryer, R.F.C. It was stated that he had received permission to fly to Leicester to visit his brother, but he lost his bearings and came down near the River Trent. On restarting, after crossing the river very low, the machine collided with a building and fell to the ground in flames. Lieut. Carryer was terribly burnt, and died two hours later in hospital. A verdict of "Accidental Death" was returned.

Two Famous French Pilots Killed.

DURING the past few days French aviation has lost two of its most famous pre-war pilots. Lieut. Marc Bonnier, who in November and December, 1913, and January, 1914, accomplished the journey in stages from Paris to Alexandria via Carlsruhe, Vienna, Budapesth, Constantinople, Jerusalem and Cairo on a Nieuport monoplane, was killed on the Russian front, but details as to how he met his end are lacking.

Second Lieut. Brindejonc des Moulineaux, who met his death in the neighbourhood of Verdun owing to the collapse of his machine, was well known in England, as after flying from Paris to London in 1913 he competed in several events at Hendon. It may be recalled that he won the race for the Geisler Cup at Hendon, but was disqualified for flying over London, contrary to the regulations. His most famous trip was that from Paris to Warsaw with a stop at Berlin on June 10th, 1913, after which he flew on to Dunsburg, Petrograd, Reval, Stockholm, Copenhagen, The Hague and so back to Paris. Other notable aerial journeys by him were from London to Paris via Calais and Brussels, Paris to Madrid and back, and from Paris to Attendorn, in Westphalia.

Wright Co. Amalgamate with Martin.

FROM New York comes the announcement that the Wright Co. and the Glenn L. Martin Co., of Los Angeles, Cal., have amalgamated under the name of the Wright-Martin Aircraft Corporation. The president will be Mr. Edward M. Hagar, president of the Wright Co., while Messrs. Glenn L. Martin and C. S. Jennison will be vice-presidents. The new concern will comprise the Martin factory at Los Angeles, which is said to be turning out 10 aeroplanes a month; the Wright factory at Dayton, O., which will continue its experimental work; the Simplex Automobile Co., which is turning out aero engines and cars at its factory at New Brunswick; the Wright Flying Field, Inc., at Mineola, Long Island; the General Aeronautic Co., which handles the foreign business of the Wright Co. Apart from the building of Simplex motors, it is stated that the firm have the right to build the Hispano-Suiza motor in the States.

The Central Aircraft Co.

CONTINUED expansion of the aircraft department business of Mr. R. Cattle has at length necessitated that it should be run separately. New works have been taken at Kilburn, and under the style of the Central Aircraft Co., Mr. Cattle has transferred this department from 27, Wybert Street, to Palmerston Works, with offices at 179, High Road, Kilburn, N.W. All communications and orders in connection with aircraft matters should therefore now be addressed to 179, High Road, and note telephone number: Hampstead 4728.

The business will remain under the same proprietorship and management, the only alteration being that the new accommodation will enable greater and quicker deliveries to be made, and it is almost needless to add that with the improved facilities every effort will be made not only to maintain the very high standard of material and workmanship for

which the firm has justly made such a good name, but, if it be possible, to even improve upon it.

Flying at Shepherd's Bush.

A FINE exhibition of flying and looping-the-loop took place last Saturday at Shepherd's Bush in connection with a Sports Day organised by Messrs. Waring and Gillow, Ltd. These exhibitions were carried out, through arrangement with the Whitehead Aircraft Co., by H. Sykes on the Martin-syde. He left Hendon Aerodrome at about 5 o'clock with a lady passenger who had never been up before. On arriving at his destination he put up a great variety of stunts, much to the delight of the spectators below, to say nothing of that expressed by his lady passenger.

Sports, &c., at Upavon.

OVER 2,000 people accepted the invitation of Colonel MacLean, the Commandant, and the Officers of the Central Flying School, to attend the C.F.S. sports, tea, concert, and dance on August 16th. The programme comprised races and gymkhana events, including pillow fight, bicycle musical chairs, and an obstacle race. Mrs. MacLean presented the prizes to the successful competitors. During the evening there was a fine display of looping, diving, and spiral descents by Service pilots.

PUBLICATION RECEIVED.

General Specifications covering Requirements of Aeronautic Instruments. Report No. 8. Washington, U.S.A.: National Advisory Committee for Aeronautics.

NEW COMPANY REGISTERED.

BRITISH AERO MAGNETO MANUFACTURERS' ASSOCIATION, LTD.—A company limited by guarantee, with 20 members, each liable for £1 in the event of winding up. Object, to promote and protect the interests of manufacturers of aeroplane and airship magnetos in the United Kingdom, to promote the consideration and discussion of subjects affecting such manufacturers, to conduct and assist in experiments and researches for the purpose of improving aero magnetos or of producing improved machines or contrivances, &c. Members must be bona fide British manufacturers of aero magnetos or their authorised representatives. The first members are the British Thomson-Houston Co., Ltd., the M.L. Magneto Syndicate, Ltd., Nicole, Nielsen and Co., Ltd., The Thomson-Bennett Magnetos, Ltd., P. F. Bennett, E. Garton, C. A. Lister and R. B. North. All other candidates are to be elected by the company. The subscription for the first year is £25 per member, afterwards as the company shall decide. The subscribers are: W. C. Lusk, 83, Cannon Street, E.C., director of the British Thomson-Houston Co., Ltd.; D. K. Morris, Victoria Works, Coventry, director of the M.L. Magneto Syndicate, Ltd.; C. H. Kirby, 14, Soho Square, W., director of Nicole, Nielsen and Co., Ltd.; B. Steeley, Arden Works, Cheapside, Birmingham, director of Thomson-Bennett Magnetos, Ltd.; P. F. Bennett, Ardencote, Four Oaks; E. Garton, Tralee, Kenilworth; C. A. Lister, Sneyd Park House, Sneyd Park, Bristol; R. B. North, St. Wilfrids, Hagden Lane, Watford.

Aeronautical Patents Published.

Applied for in 1915.

Published August 24th, 1916.

8,583. W. H. BLOOMFIELD. Aiming device for use on aircraft.
17,434. A. W. JUDGE AND VARIOPLANE CO. Propellers for aircraft.

FLIGHT.

44, ST. MARTIN'S LANE, LONDON, W.C.
Telegraphic address: Truditur, London.
Telephone: 1828 Gerrard.

SUBSCRIPTION RATES.

"FLIGHT" will be forwarded, post free, at the following rates:—

UNITED KINGDOM.			ABROAD.		
	s.	d.		s.	d.
3 Months, Post Free	1	8	3 Months, Post Free	2	9
6 "	3	3	6 "	5	6
12 "	6	6	12 "	11	0

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 44, St. Martin's Lane, W.C., and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.